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IT PROS PREPARE AS WAR IN INDIA LOOMS

U.S. firms reviewing contingency plans of offshore software development companies

BY JAIKUMAR VIJAYAN
AND THOMAS HOFFMAN

The escalating tension between India and Pakistan is prompting U.S. outsourcing clients to review the disaster preparedness of software development firms in both countries.

The scrutiny covers aspects such as the developers' network redundancy, their access to backup communications circuits, their systems documentation practices and their ability to quickly move key personnel and pro-

cesses to safer locations in Europe and North America.

There is no indication that the situation has caused any major U.S. corporations to pull out of projects in the region, analysts and vendors said. But they're putting contingency plans in place.

"We are critically concerned, especially by the nature of the conversation regarding the use of nuclear weapons," said Jim Beattie, chief technology officer at CCC Information Services

Inc., a Chicago-based company that provides IT services to the automotive claims and collision-repair industries.

CCC is working on a joint application development project in India with Cognizant Technology Solutions Inc., a Teaneck, N.J.-based vendor with operations in that nation.

Offshore, page 16

**WORLD
WATCH**

FEDS EYE HUGE SMART-CARD ROLLOUT

Use may spur adoption by private-sector firms

BY PATRICK THIBODEAU
WASHINGTON

The federal government plans to deploy tens of millions of biometric-enabled smart cards over the next few years. The resulting economies of scale could lower product costs in the private sector, increase application development and improve card interoperability.

It's a technology direction that won strong endorsement from the White House last week.

The biggest end user will be the new federal Transportation Security Administration. Depending on how much Congress decides to spend, the agency will issue between 10 million and 15 million smart cards to air, rail, sea and highway transportation workers over the next three years.

Smart Cards, page 16

BIG RETAILERS PUSH DATA TIES

But suppliers may need to revamp their systems

BY BRIAN SULLIVAN
AND MICHAEL MEEHAN

Looking to increase the electronic exchange of product data, a group of more than 20 top retailers, supermarket chains and consumer goods manufacturers is pushing companies in those industries to adopt a common set of data synchronization standards and technology by year's end.

The group includes retail heavyweight Wal-Mart Stores Inc., which in April notified its

Data Ties, page 61

What They Want

WAL-MART AND OTHERS ARE SEEKING:

THE ADOPTION of data synchronization standards

THE USE of UCCnet's product data registry service by at least 600 companies

DEVELOPMENT of data sharing capabilities among various on-line exchanges



DAVID STRICK

After The Jolt IT Re-energizes California Utilities

California's crippling energy crisis of 2000 and 2001 has finally stabilized, letting utility company IT leaders such as Southern California Edison CIO Mahvash Yazdi (above) start looking beyond the present. Using approaches that require both fiscally conservative and ambitious investments, they're focusing on some big projects, including long-overdue updates of key systems and processes. The goal: to best position their companies to deal with an uncertain future.

STORY BEGINS ON PAGE 24.

“There is no reason
for any individual
to have a computer
in their home.”

1977

“640K ought
to be enough
for anybody.”

1984

“Portal,
schmortal.”

2002

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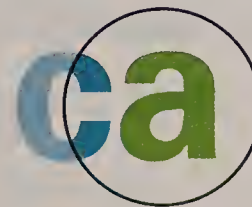
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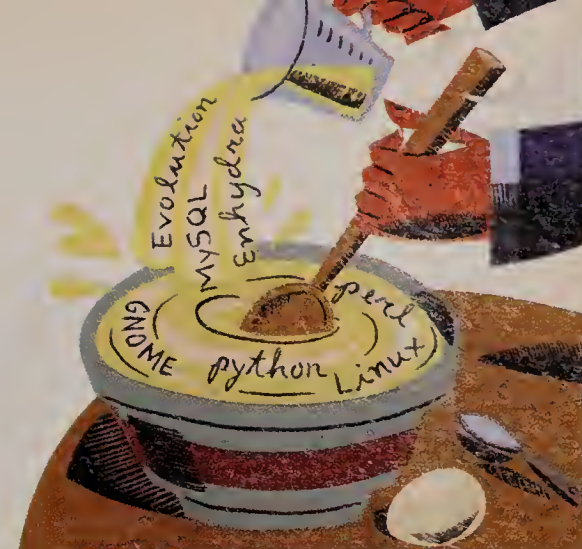
PETER SERLING

LOFTY TITLE, LITTLE POWER

Chief security officers may have attained a chief-level title, but they have little else to show for it. The departures of top CSOs such as Steve Katz (left), formerly of Merrill Lynch, indicate the problems some of them are facing, even in the wake of Sept. 11. **PAGE 28**

ENTERPRISES ADDING OPEN SOURCE TO MIX

Corporate developers have quietly begun to use a host of open-source tools and products to build critical applications for businesses. **PAGE 46**



RICHARD LILLASH

JUNE 10, 2002

COMPUTERWORLD THIS WEEK

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BREAKING NEWS

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www.computerworld.com

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62 Frank Hayes says a letter from Ralph Nader to the White House and a white paper by a Microsoft-funded think tank don't get to the heart of the matter on the use of open-source software.

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QuickLink: a1430

WILL THE FEDS LISTEN TO NADER?

Computerworld community members weigh in on consumer activist Ralph Nader's suggestion to the White House that the government can keep Microsoft in line by adopting open-source software.

QuickLink: a2160

HIDDEN DATA

After reading this week's QuickStudy about hiding sensitive information in innocent-looking image files, head to our Web site for links to some useful steganography tools.

QuickLink: 30130

WHAT'S A QUICKLINK?

On some pages in this issue you'll see a QuickLink code pointing to additional, related content on our Web site. Just enter that code into our QuickLink box online, which you'll see at the top of each page on our site.

Use QuickLinks to see related stories, discussion forums, research links, archives and more.

AT DEADLINE

Intel Drops Q2 Revenue Forecast

Intel Corp. lowered its revenue estimate for the quarter ending June 29, blaming soft sales of microprocessors used in desktop PCs, as well as sluggish demand for chips in Europe. The company said it expects revenue of \$6.2 billion to \$6.5 billion, down from earlier forecasts of \$6.4 billion to \$7 billion. Intel expects better results in the second half of the year.

IBM Offers Remote Web Server Hosting

IBM's IT services unit announced an off-site Web hosting program under which it will remotely manage servers located in corporate data centers. The new service is aimed at companies that have 30 to 1,000 Web servers and that don't want to move the systems to an IBM facility. Servers will be linked to IBM hosting facilities via virtual private network connections, the company said.

Deloitte Consulting Set to Be Spun Off

Deloitte Consulting, the IT and management consulting arm of New York-based accounting firm Deloitte Touche Tohmatsu, said it expects to become a separate, privately held company by year's end. A merger or sale has been ruled out, said Deloitte Consulting, which will change its name after the split takes place.

Nortel Expects Stock Sales to Net \$1.3B

Nortel Networks Ltd. said it expects to raise \$1.3 billion in U.S. currency through a pair of public stock and equity offerings. The Brampton, Ontario-based company, which is struggling for sales along with other telecommunications equipment vendors, said the projected proceeds are about \$500 million more than it initially anticipated.

SAP to Simplify, Streamline Apps

Vendor will remove unneeded features, make products easier to use and install

BY MARC L. SONGINI
ORLANDO

LOOKING TO ADDRESS some longtime user concerns about its business applications, SAP AG is pushing to make its software faster, easier to use, cheaper to operate and less complex for small and midsize companies.

At its Sapphire '02 user conference here last week, SAP detailed a series of upcoming products and planned application changes designed to simplify installation, use and management of the software (see chart).

For example, SAP CEO Hasso Plattner said during a keynote speech that with input from users, the company plans to prune up to 50% of the features from its application suite because they're now obsolete. That should boost the software's performance and lower

its total cost of ownership, according to Plattner.

He also said that SAP will replace the user interfaces in many of its applications with new ones built around the company's browser-based and platform-independent Web Dynpro technology. Those changes will come with the next version of SAP's customer relationship management (CRM) software, which was announced last week and is due in September.

The simplification plan isn't an entirely new tack for SAP, which has been working for the past four years to make its software easier to use. Nonetheless, several IT managers who are trying to deal with the complexity of the applications said the company's plans are a step in the right direction.

Gary Coleman, vice president of information systems at the aerospace division of

Goodrich Corp. in Charlotte, N.C., said the quality of SAP's flagship R/3 enterprise resource planning software is high. But he added that SAP needs to make its technology friendlier, especially for users at smaller companies.

The aerospace unit went live with R/3 in January after a relatively smooth 14-month implementation that retired 237 legacy applications, Coleman said. But he noted that some smaller Goodrich operations are hesitant about R/3. Convincing them to adopt the software "will be more challenging and place more emphasis on managing the total costs of ownership," he said.

Implementation Hurdles

Jenny Trautman, director of IT at Atlanta-based Cox Newspapers Inc., said the company is rolling out SAP's application bundle for media companies on a test basis. The publisher plans to go live with R/3's human resources module next month, but Trautman said there are two hurdles to selling

Rollouts Include 'Cross Applications'

In addition to its CRM software upgrade, SAP last week announced plans to develop a set of "cross applications" that will work with its own software as well as with products from rival vendors such as Oracle Corp. and PeopleSoft Inc.

SAP said the component-based technology is aimed at automating processes such as real-time collaboration and data-sharing between companies. The first product, due in the fourth quarter, will support project management activities.

Bruce Richardson, an analyst at AMR Research Inc. in Boston, said the cross-applications concept is long overdue and should give users a way to layer new applica-

tions on top of existing enterprise resource planning systems.

Other products announced at Sapphire included SAP Business One, a set of applications aimed at small and midsize companies. The software, also scheduled for release in the U.S. in the fourth quarter, is based on technology SAP acquired from Israeli vendor TopManage Financial Solutions Ltd. in March.

SAP is squaring off in that part of the market with Microsoft Corp., which last month agreed to buy Navision A/S in Denmark [QuickLink: 29602]. SAP said support for exchanging data between SAP Business One and its applications for larger companies

is due in the fourth quarter.

SAP also announced collaborative project management software and said a promised upgrade of its Web application server with built-in Java support is now available. In addition, the company said it will work with San Jose-based Adobe Systems Inc. to integrate that company's document management software with the mySAP.com suite.

Jay Wilson, CIO at prefabricated and mobile home manufacturer Cavalier Homes Inc. in Addison, Ala., said the Adobe support would make it easier for the company's online mortgage operations to process legal documents. Cavalier runs R/3's finance, distribution and materials management modules.

— Marc L. Songini

Coming Soon

SAP made the following announcements at its Sapphire user conference:

VERSION 3.1 of its CRM software is due this fall. It will have a new role-based user interface that will later be deployed in other SAP applications.

SAP BUSINESS ONE, a set of applications that's tailored for small and midsize companies, is due in the fourth quarter.

ELEVEN INDUSTRY-SPECIFIC APPLICATION PACKAGES are being developed for midsize companies that have more sophisticated transaction needs.

A LINE OF CROSS-APPLICATION SOFTWARE will tie together different applications to manage specific business processes.

INTEGRATION between SAP's CRM and supply chain management apps has been increased.

the project internally: cost and complexity.

Cox is highly decentralized, and Trautman said some of its business units are worried about the potential difficulty of installing the software. "Various parties said, 'It's so complicated that we're afraid to put it in,'" she said.

Other users and analysts noted that SAP's software can be particularly complex for casual users who don't want to master its nuances or navigate through multiple screens to process transactions.

Tom Ackerman, senior director of business information systems at Symbol Technologies Inc., said the Holtsville, N.Y.-based maker of bar code scanners and other handheld devices spent nine months configuring SAP's mobile sales module, partly to "dumb down" the software for users.

"We had to keep it simple and mask the complex elements," Ackerman said. Otherwise, he added, the company's sales staff likely wouldn't use the software. ▀

APPLICATION-AWARE

For more coverage of business applications, head to our Supply Chain/ERP Knowledge Center:

 **QuickLink: k2000**
computerworld.com

United Technologies in \$4.5B IT Overhaul

Changes include standardizing systems and networks, reducing servers and apps

BY LUCAS MEARIAN

United Technologies Corp. (UTC) announced last week that it is undergoing a complete IT infrastructure overhaul and consolidation that will cost \$4.5 billion but will save the company \$1 billion through efficiencies over the next 15 years.

The project, which UTC has outsourced to Computer Sciences Corp. (CSC) in El Segundo, Calif., includes changing out 45,000 PCs, standardizing on a single backup-and-recovery platform and consolidating the business-critical workloads in 20 major data centers into three. The majority of the work is expected to be completed by the end of the year.

Most recently, CSC helped the Hartford, Conn.-based conglomerate standardize its North American data centers on Mountain View, Calif.-based Veritas Software Corp.'s NetBackup storage software utility. The suite gives UTC autodiscovery features and centralized and remote management capabilities. The company had been using a variety of point products for backup and management services that occasionally lost mission-critical data.

"Before, we were dealing with backups occurring haphazardly, depending upon where a device was. Now every critical system will have a disaster recovery plan," said UTC CIO John Doucette.

Bob Zimmerman, an analyst at Giga Information Group Inc. in Santa Clara, Calif., said that many companies that are consolidating IT systems are discovering that their old backup systems don't work.

Zimmerman noted that Veritas' NetBackup product tends to be the priciest among those in its class, but it's also the easiest to configure.

UTC's companies, which include Pratt & Whitney, Hamilton Sundstrand Corp., Sikorsky

Aircraft Corp., Carrier Corp., Otis Elevator Co. and UTC Fuel Cells, had been operating out of data centers running on proprietary platforms.

After decades of growth, the \$28 billion company's data centers and server farms were dispersed throughout the U.S. Its eight mainframes, 11 IBM AS/400 servers and 2,950 other servers were also dispersed among those data centers. Since having consolidated them into a mirrored data center on its Pratt & Whitney campus in East Hartford and two other data centers owned

by CSC in Meriden, Conn., and Norwich, Conn., the company needs only two mainframes and two AS/400 systems. It expects to drop about 350 servers by the end of the year.

"We identified 160,000 pieces of software and probably ended up putting 5,000 pieces of software back," Doucette said. "The other thing we did with our PCs was to lock them down. People can't go out on the Internet and download software onto them. There's just tons of inefficiencies with that."

UTC is creating two storage-area networks, also to be located on the East Hartford campus, that will run off of Hitachi Data Systems Corp. Freedom Storage 9900 and EMC Corp. Symmetrix RAID boxes.

The company is also standardizing its network on Computer Associates International Inc.'s Unicenter TNG management tool. In another move, UTC consolidated 15 help desks running nine applications into one center running one system.

Henning Kerger, director of transformation for CSC's UTC account, said a CSC site in Newington, Conn., will be used for UTC's Web hosting facility.

"The biggest challenge was to get away from a disparate situation, where every business unit was unique and had its own standards and quality of people varying from unit to unit," Kerger said.

For example, UTC found itself with multiple PC platforms. While it had considered changing out 20% of its workstations and platforms each year, Doucette said that would have made

it more difficult to standardize.

The company has completed about 95% of a changeover to Dell Computer Corp. PCs running Windows 2000 and Office 2000. Doucette said that along with the remote control of systems, that's "the biggest part of reducing cost." ▀

UTC Transformed

UTC's outsourcing deal with CSC includes:

- Changing out 45,000 PCs on disparate platforms
- Consolidating 20 data centers into three
- Creating two mirrored storage-area networks
- Standardizing on a single backup-and-recovery platform
- Standardizing on a network management platform

UCITA Backers Hatch New Plans for Adoption Push

But opposition to law is still strong

BY PATRICK THIBODEAU
WASHINGTON

David Lewis isn't a lawyer or a politician. But that didn't keep him from preventing UCITA from being introduced in the Utah state legislature.

And the CIO at Deseret Mutual Benefit Administrators in Salt Lake City has a message for IT managers concerned about this software licensing law. "One thing I have learned in this process is that it doesn't take very many voices to have an influence," said Lewis.

The Uniform Computer Information Transactions Act wasn't passed in any state this year because of vocal opposition and a decision by its drafters not to press for adoption until some changes were made to it. Those proposed changes were finalized late last month.

If the changes win approval

at the National Conference of Commissioners on Uniform State Laws' (NCCUSL) annual meeting beginning July 26, UCITA will be ready for a new push for acceptance. The Chicago-based group develops uniform commercial laws for state-by-state adoption.

If opposition "remains vociferous and widespread, we will have problems with UCITA," said John McCabe, legislative director of the NCCUSL. But if the proposed changes can mollify some opponents, he added, "then this may have some opportunities. But we have to wait and see."

Cautious Optimism

Proponents acknowledge that they can't satisfy everyone but said that they hope the changes to the proposed law can peel away some opponents.

The changes that represent the most significant potential consequences for IT were offered earlier this year. Those include the elimination of a provision that would allow

vendors to remotely shut down systems in a contract dispute, as well as one that would allow reverse-engineering for interoperability, which was previously banned.

But following the release of those initial changes, the Society for Information Management said UCITA remains too flawed to support. The Chicago-based organization has some 2,600 members, many of whom are senior IT managers.

Two years ago, Lewis met with the president of the Utah Senate to discuss UCITA. Also at that meeting was a lawyer from a software company, advocating UCITA. Lewis be-

lieves that as a result of his involvement, the Senate president was able to understand the depth of the controversy. "You don't need a legal mind to understand this is a very one-sided law," said Lewis.

The president told both sides to work out their differences.

UCITA sets default rules for software licensing. Vendors support the act, but it's opposed by a coalition of end users, library and consumer groups, and 32 state attorneys general, who say the law gives vendors too much power on contracts. This active opposition has succeeded in limiting UCITA's adoption to only two states, Virginia and Maryland.

The latest set of amendments are in response to a February report by a committee of the Chicago-based American Bar Association that cited numerous problems with UCITA and called for a rewrite.

Carol Ashworth, who's heading an anti-UCITA effort at the American Library Association's office in Washington, said she saw little in the changes to convince her that the proposed law has been reformed.

"There is some tweaking that is going on, but substantively, there haven't been any real changes," said Ashworth. ▀

AT A GLANCE

Round 2?

WHAT'S NEW: In response to opponents, the UCITA drafters made some changes and added consumer-protection language. But drafters rejected recommendations such as one that would require a license to be made available before a licensee pays or is obligated to do so.

THE OUTLOOK: Uniform laws can take years to win state adoption; UCITA's backers are in it for the long haul.

WHAT'S NEXT: Once the changes to UCITA are incorporated, expect a new push for states' adoption of the act.

The Best of the Best

Computerworld honors pioneers and innovative projects in IT at gala event

BY BOB BREWIN
WASHINGTON

A COLLABORATIVE effort to harness the power of PCs to listen for faint signals from the far reaches of the universe, a Web site dedicated to peace

and designed to help children deal with the aftermath of last year's terrorist attacks, and a transnational effort to provide computer-based education to 15 African countries were among the 10 IT projects selected for recognition last week as part of the annual *Computerworld* Honors program.

Patrick J. McGovern, chairman of International Data Group, *Computerworld's* parent company, said the people behind these projects harnessed their passions to the power of technology in ways that can change the world, dubbing these pioneers "the new heroes" of the global IT industry.

At a gala dinner at the National Building Museum here, McGovern said the achieve-

ments of the individuals and organizations selected for inclusion in the Honors program over the years have been archived at 140 universities and research institutions worldwide and on Web sites that have received 800 million hits. ▀

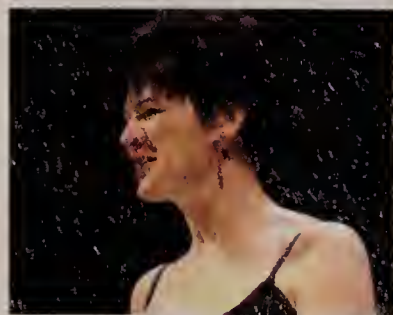
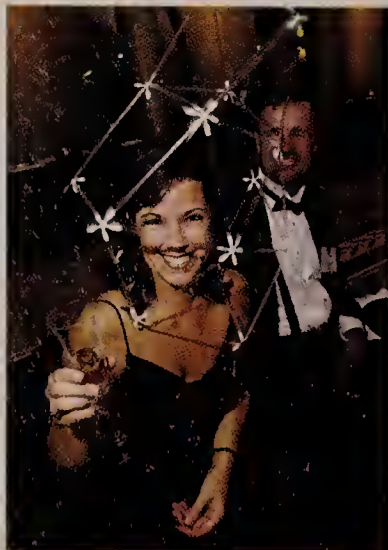
AND THE WINNERS ARE . . .

For a complete list of *Computerworld* Honors program winners, visit our Web site:

 QuickLink: 30296
www.computerworld.com



The National Building Museum in Washington

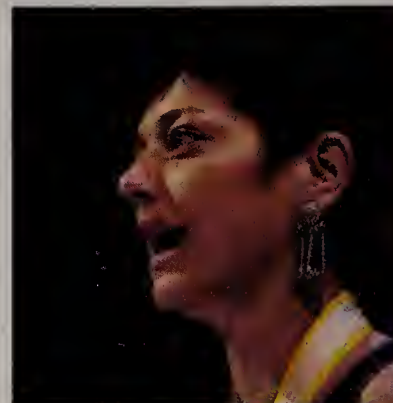


Maryfran Johnson, *Computerworld's* editor in chief



IDG Chairman Patrick McGovern salutes the heroes of global IT.

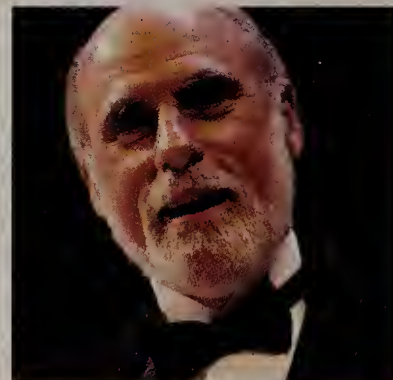
SOME OF THE WINNERS . . .



Idit Harel, MaMaMedia Inc.



Theodore Ahlers, African Virtual University



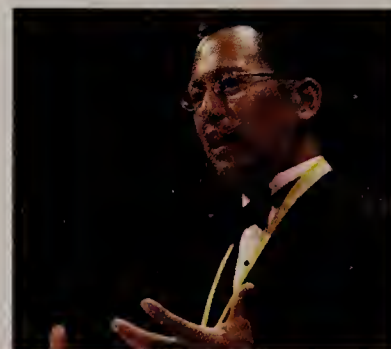
Vinton G. Cerf, WorldCom Inc.



Lisa Henley, Oklahoma Department of Human Services



Heyward Donigan, Cigna HealthCare



Agilent Technologies Inc. CIO Marty Chuck (above) and other honorees at the *Computerworld* gala celebrate creative new ways of applying technology to real-world situations.

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BRIEFS

Unisys, Post Office Settle Y2k Claims

The U.S. Postal Service said that Unisys Corp. agreed to pay about \$900,000 to settle Y2k-related overbilling claims. The dispute involved systems remediation work done by unqualified workers or not performed as required, the Postal Service said. Blue Bell, Pa.-based Unisys declined to comment.

Sun Patches Two Holes in Solaris

Sun Microsystems Inc. issued a software patch to plug a pair of security holes that could be used to gain root-level access to servers running three versions of its Solaris operating system. Sun said the vulnerabilities were discovered in Simple Network Management Protocol agents in Solaris 2.6, 7 and 8. Systems are only vulnerable if they run both agents, the company added.

Dell Buys Firm, Expands IT Services

Dell Computer Corp. acquired Plural Inc., a New York-based company that offers application development, integration and consulting services to users running Microsoft Corp. software. The companies didn't disclose the terms of the deal, which is aimed at boosting Dell's relatively small IT services business. Plural, which has 200 employees, had revenue of \$46 million last year.

Kumar Says Users Holding Off on Buys

Sanjay Kumar, CEO of Computer Associates International Inc., said many corporate users still aren't investing in future IT needs, even though they have become less jittery about making purchases. The reluctance to spend "might stay around for a while," Kumar said at a meeting that Islandia, N.Y.-based CA held with financial analysts.

Microsoft Developing ID-Sharing Software

TrustBridge technology to support single sign-on but won't be ready until next year

BY CAROL SLIWA

MICROSOFT LAST week laid out more details about its security road map for Web services, unveiling Windows-based software that aims to help businesses share user identity information with one another.

The announcement gave Microsoft Corp. a marketing jump on the rival Liberty Alliance Project backed by Sun Microsystems Inc., which isn't expected to reveal the first part of its technical specification until later this summer. But the Microsoft software, code-named TrustBridge, isn't due to ship until next year. And right now, little is known about the final form it will take.

Steven VanRoekel, director of Web services marketing at Microsoft, said TrustBridge

could be sold separately or bundled into a product, such as the Windows .Net server operating systems or the Internet Security and Acceleration Server.

One of the main potential benefits of the TrustBridge software is that it will enable users from one company to log in and prove their identities just once, on their own systems, to gain access to applications and resources they're authorized to use on other companies' systems.

Steven Sommer, CIO at New York law firm Hughes Hubbard & Reed LLP, said he can envision allowing clients or other law firms to access a database relating to a particular case through Web services, rather than duplicating the information and giving copies.

"We've been looking for the one sign-on approach within our own organization, so this is

Microsoft's plans for Web services security:

.NET PASSPORT authentication service for business-to-consumer interaction will add support for Kerberos and other key Web service standards next year.

VISUAL STUDIO .NET will support WS-Security later this year to allow developers to add digital signature support and SOAP message encryption.

WINDOWS .NET SERVER, due to ship next year, will provide cross-directory trust, integration of Passport and security protocol translation.

just an extension," Sommer said. "I think that would be a boon to us, and less expensive to maintain in the long run."

But some corporate users said they see no pressing need for the TrustBridge software.

Jon Dell'Antonia, vice presi-

dent of information systems at OshKosh B'Gosh Inc. in Oshkosh, Wis., said his company already accesses 401(k) and other human resources information from an outside firm, and the advantage of switching to a Web-services-based system is unclear to him.

Dell'Antonia said he can see the potential value of the TrustBridge technology, but he noted that he can't dictate what type of software his outside providers use.

Catherine Quirk, an analyst at Boston-based AMR Research Inc., said the main downside is that in order to get the optimal security features, both parties must be running the TrustBridge software. VanRoekel noted that both parties must also use Active Directory or some other directory that supports Kerberos Version 5.

He said that under the TrustBridge scenario, users would log on to their systems and receive tickets that employ Kerberos technology to ensure that they're valid users. The TrustBridge software encapsulates that information into an XML-based message, which is transmitted through the corporate firewall's HTTP port via the Simple Object Access Protocol to another company.

The other firm's TrustBridge software would then decode the message and pass the information to the network, finalizing a trust relationship, VanRoekel said.

John Pescatore, an analyst at Stamford, Conn.-based Gartner Inc., said the Microsoft system will enable companies to use Windows servers for authentication instead of paying companies that will charge per-user fees for that service.

"The downside to IT shops is they start getting driven more and more to a single platform," he said. "This puts added pressure on the Liberty Alliance to quickly come out with their standards for doing this same type of trust brokering." ▀

Security Appliance Monitors Wireless LANs

System sniffs for rogue access points

BY BOB BREWIN

Wireless LAN security got some long-needed help last week, observers said, when AirDefense Inc. released a product that can detect wireless hackers and unauthorized rogue access points installed on enterprise networks by employees or malicious intruders.

Alpharetta, Ga.-based AirDefense's namesake security appliance, which began shipping last week, includes a software database containing the electronic signatures of most wireless LAN cards as well

as the signatures of wireless hacking freeware such as NetStumbler.

The system monitors the area around an office building or manufacturing plant for signals in the 2.4-GHz frequency band. It sniffs the airwaves for signals and then compares them to authorized devices and software that are listed in the database.

Jay Chaudhry, CEO of AirDefense, said these features can let network managers identify probes of a wireless LAN network or detect the operation of a rogue access point connected to the network.

Dave Bray, director of network technology services at ADC Telecommunications Inc.

in Eden Prairie, Minn., said his company is evaluating the system. He said he hasn't "seen another product like this."

Bray said that ADC, which has more than 100 facilities worldwide, is "worried about rogue access points, because the price has come down so far [to around \$100] that almost anyone can go out and buy one. They're also easy to install, and once installed, someone can sit in our parking lot and gain access inside our trusted network."

Matthew Kovar, an analyst at The Yankee Group in Boston, said AirDefense is ahead of the competition in developing a multifaceted security tool for the wireless LAN market. ▀

SECURITY UPDATE

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Controversy Clouds Calif. Energy Market Systems

Foggy regulations, unwieldy technology complicate charges of Perot impropriety

BY MELISSA SOLOMON

A SENATE investigation into whether Perot Systems Corp. coached energy suppliers to manipulate the very systems it built for California's electrical power grid operators raises a fundamental question: Does the state have the wherewithal to develop a workable system to manage the energy market?

The development of risk-management software to ensure that market participants are playing by the rules is easy, according to Ethan Cohen, a manager at Blue Ridge Partners, a utility and financial services consulting firm in McLean, Va.

But without clear rules from the Federal Energy Regulatory Commission (FERC) about what constitutes illegal activity and the consequences of violating the rules, the systems are useless, he said.

"I don't think anyone at the end of the day wants FERC to be a dogged policeman of the energy markets," said Cohen. "But FERC hasn't said anything consistent about bulk power markets in 20 years."

That may account for some of the haziness over legal and ethical issues associated with last week's revelations about the alleged activities of Plano, Texas-based Perot Systems.

Slide presentations released last week by the Senate subcommittee investigating price manipulation in California's wholesale markets describe "holes" in the state's energy

market system and strategies that firms could use to increase congestion and drive up costs.

The slide presentations were prepared by Perot Systems and uncovered by the subcommittee in subpoenaed documents turned over by Houston-based Reliant Energy Corp. Perot Systems was one of two contractors hired to build, test and manage the computer systems for the California Independent System Operator (ISO) and the now-defunct California Power Exchange Corp.

But Stephanie McCorkle, a

spokeswoman for the ISO, said last week that it's not clear that any of the strategies described in the Perot presentation revealed classified information.

"Obviously, we would be extremely concerned if there was a business relationship established and proprietary information was released," said McCorkle. If the ISO finds that Perot violated its confidentiality clause, it will bring the matter to court, she said.

In a statement last week, Perot Systems said it prepared the presentation to help the ISO identify and correct flaws in the system and insisted that it didn't share the information

with market participants.

In March 1997, Perot and Zurich-based ABB Ltd. won a yearlong \$57 million contract from the ISO to lead an alliance of vendors to develop, test and manage a systems platform to operate the state's deregulated power market.

That's where the fundamental problem lies — in the ISO's computer systems, said Chris Schreiber, an aide to Sen. Joseph Dunn (D-Calif.), co-chairman of the Senate subcommittee that released the Perot presentation.

"The system is so cumbersome... and no one [at the ISO] knows how to run it, and

MORE THIS ISSUE

IT is re-energizing California utility companies. Page 24

Wall Street Aims to Thwart Criminals With Database

BY LUCAS MEARIAN

More than a dozen Wall Street firms are joining forces to create a company that will offer a customer database to the financial services industry for screening out suspected criminals. The move is intended to help companies comply with new antiterrorist regulations.

The Regulatory DataCorp Int'l LLC is principally the creation of The Goldman Sachs Group Inc. in New York, but it's also being financially supported by firms such as Merrill Lynch & Co., Citigroup Inc. and UBS PaineWebber Inc.

The company is expected to launch in the next couple of weeks, said a Goldman Sachs spokeswoman. Other companies involved in the venture didn't return phone calls or declined to comment.

According to published reports, Regulatory DataCorp will compile information from

public resources including international, federal and local law enforcement records. It will then sell access to the database to other companies so they can screen potential customers. Regulatory DataCorp will be a separate company from its founders, said the Goldman Sachs spokeswoman, who declined to comment further on the venture.

While not unique, the database would be among only a handful in the world performing industrywide customer searches, according to Brian Smith, a partner at law firm Mayer, Brown, Rowe & Maw in Washington, which specializes in regulatory issues in the financial services marketplace.

"The big difference here is that it is financial services firms doing this and not technology companies," he said.

Since the U.S. Patriot Act was passed by Congress in re-

sponse to the Sept. 11 terrorist attacks, banks and brokerages have been scrambling to comply with rules that require them to "know their customers" prior to allowing them to open accounts (see box).

Richard DeLotto, an analyst at Gartner Inc. in Stamford, Conn., said it makes sense for the firms to work together. "If there's a bad guy working in town, he's going to walk from bank to bank. So it increases the likelihood of catching a money launderer or terrorist," he said.

British banking compliance

firm World-Check Inc., which is supported by Swiss banks, gained notoriety when it was discovered in February that it had profiles of 15 of the 19 Sept. 11 hijackers in its database and had listed them as "high risk." World-Check claims to have a total of approximately 55,000 individuals listed.

The Financial Services Information Sharing and Analysis Center is a private organization in New York that charges companies a minimum \$7,000 annual fee for alerts and access to information about hacking and cyberterrorism threats.

However, some privacy advocates fear that private industry databases will prevent consumers from reviewing information affecting their ability to use financial services.

"There have been concerns that [other databases] operate under a cloak of secrecy," said Stephen Keating, executive director of The Privacy Foundation in Denver. He said Regulatory DataCorp's database could be more comprehensive than others because it's expected to retrieve information from hundreds of sources worldwide. ■

AT A GLANCE

Power Play

The IT systems that Perot and ABB built for the California energy market operator include:

- Energy management system to monitor real-time performance of the electric system
- Plant information system that provides power plant data
- Scheduling infrastructure and applications to balance energy production and use
- An Internet-enabled automated dispatch system for last-minute energy needs
- Meter data acquisition system
- Systems that bill customers and settle differences between deliveries and schedules
- A data warehouse

no one understands it," he said.

On May 1, the ISO submitted a new systems design plan to the FERC that addresses and corrects many of the loopholes that have been identified, said McCorkle. The FERC is scheduled to review and make a decision on the plan by October. ■

The Patriot Act

THE U.S. PATRIOT ACT REQUIRES BANKS TO:

VERIFY the identity of anyone seeking to open an account.

MAINTAIN records of the information used to verify a person's identity.

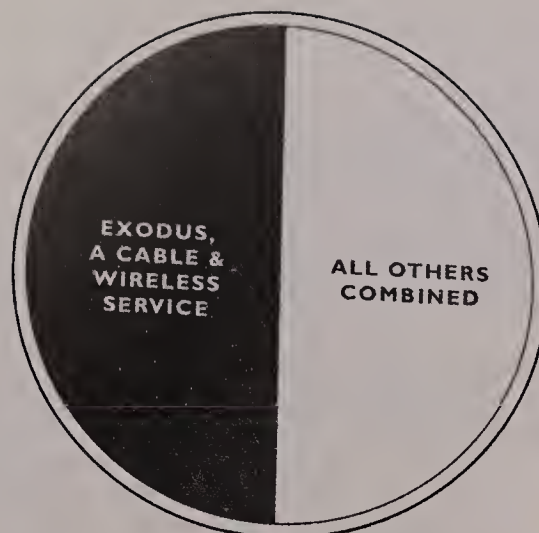
DETERMINE if the person opening the account is on any government-provided lists of known or suspected terrorists or terrorist organizations.

SOURCE: GARTNER INC., STAMFORD, CONN.

PEROTPOINT

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Merged HP to Boost Consulting, Services

Company realigning 65,000-person services organization into five areas

BY JAIKUMAR VIJAYAN

HEWLETT-PACKARD Co. will focus on delivering a wide range of IT consulting and business process services as part of its postmerger strategy, a senior executive said last week.

To lay the groundwork for that effort, HP is realigning its 65,000-person services organization into five major areas: IT and business governance services, agile and mission-critical infrastructure services, extended enterprise services, open-environment services and next-generation technology services.

The goal is to expand HP's services capabilities beyond its

current emphasis on IT infrastructure support, said Juergen Rottler, a senior vice president with HP's services organization. Going forward, HP's emphasis will be on building capabilities that let it engage with users from the application design stage right through

HP UPDATE

In a briefing with financial analysts last week, HP executives also said the company:

- Expects to complete 15,000 layoffs by October, 2003.
- Has offered voluntary retirement options to 900 employees.
- Will realize a \$2.5 billion cost savings from its Compaq acquisition by October, 2003.

integration, management and end-of-life/migration services.

"We are talking about significantly more end-to-end services that start with customer business problems rather than just a technology," he said.

Don't expect to see any major new HP services offerings in the near term though, cautioned Eric Rocco, an analyst at Gartner Inc.'s San Jose-based Dataquest unit.

For the next 12 to 18 months or so, HP is likely to be preoccupied with the task of integrating its own services organization with that of Compaq Computer Corp., Rocco said.

"But their goal certainly is to take what is currently the largest IT infrastructure support organization in the world and craft it into a full-service company like IBM," he said.

As part of that strategy, Rocco said, look for HP to make

targeted acquisitions in areas where the company needs to quickly build capabilities.

HP's unsuccessful bids last year to acquire consulting giant PricewaterhouseCoopers and Comdisco Inc.'s disaster recovery unit are indications of the company's strategy in this area, Rocco said.

In the short term, HP's strategy will rely on taking maximum advantage of its combined strengths in horizontal technology segments such as Microsoft Corp.'s Exchange and in vertical segments such as the telecommunications sector, said Laurie McCabe, an analyst at Summit Strategies Inc. in Boston.

"But they still have a long way to go on the consulting side to catch up with an IBM or an EDS," McCabe said. As a result, look for HP to rely heavily on channel partners to deliver key services capabilities while it builds its own, she said. ▀

MORE ON THE MERGER

For full coverage of the HP/Compaq merger, visit our Web site:

 **QuickLink: a1650**
www.computerworld.com

HP Mulls Retreat From Middleware

HP may discontinue some of its middleware products as part of its postmerger software strategy.

In a briefing with financial analysts in Boston last week, HP executive Peter Blackmore said the company is rethinking its middleware strategy and is "considering retiring some assets in that space."

Going forward, the company will depend on partnerships with other software vendors to meet customer requirements in this space, he said.

An HP spokeswoman said the company will make a definite statement regarding its middleware plans the week of June 25, at an HP event in Seattle.

A core part of HP's middleware suite is its Java application server, which it acquired in October 2000 when it purchased Bluestone Software Inc. HP has made the software available as a free download to users in addition to bundling it along with its HP-UX operating system.

— Jaikumar Vijayan

Web Services Loom Ahead for Travel Firms

Technology eyed for online bookings

BY JENNIFER DISABATINO
NEW YORK

Today's, text-pager-toting teenagers are tomorrow's travel buyers, and the industry is building an IT infrastructure for that future.

Web services will become an important distribution channel for travel companies, according to several IT executives who attended last week's Travel Commerce Conference & Expo here. But it will be a while before browsers replace booking agents, they said.

"With a \$5,000, five-island Hawaii trip, people just aren't closing it online," said Andre Haroche, CIO at Liberty Travel Inc. in Ramsey, N.J. "Will they do it 30 years from now? Yeah, they will. We're dabbling in

[Web services] in the right places, so when it's mature, we'll go with it."

Conference attendees said that to survive, online travel sites that today primarily sell commodity travel services, such as economy airline seats, will increasingly sell higher-yield packaged deals.

That will require the creation of standards-based links between suppliers, so travel agents and consumers can tie together a flight, hotel, car rental and even snorkeling sessions while retaining business rules and customer information for each company.

The OpenTravel Alliance Inc. in Alexandria, Va., is working on XML standards specifically for the travel industry.

But companies say they can't wait until the organization's standards are complete before creating online business relationships with customers and business partners.

Airlines, car rental companies, hotel chains and online travel vendors such as Expedia

Why Web Services?

Travel-based Web standards will help companies share data to improve:

- **Security, by creating uniform identity and traveler profiles**
- **Customer relationship management**
- **Personalization**
- **A la carte packaged vacations from multiple suppliers**
- **Yield management**

Inc. have already created inventory links. For example, Bellevue, Wash.-based Expedia provides yield management analysis tools to customer hotels over the Web.

In 1999, Budget Group Inc. in Lisle, Ill., started investing in direct links to partner airlines and corporate customers through Java-based middleware, said Marylou Johnson, the company's vice president of IT services.

For others, the demand isn't there yet. Tom Murphy, CIO at Royal Caribbean Cruises Ltd. in Miami, said that only about 1% of his company's sales come from its Web site.

Both Royal Caribbean and Liberty Travel are building infrastructures with IBM Global Services to create Web services in anticipation of the coming demand, but Royal Caribbean is basing its system on Java and Liberty is using .Net from Microsoft Corp.

Liberty Travel will relaunch

its booking engine online next month, and the international travel agency is developing middleware that translates data stored in mainframe systems so agents can book flights more easily and efficiently.

Liberty Travel already hosts a private-label service through its Gogo Worldwide Vacations Inc. division, which hosts inventories of available bookings for other travel agencies such as Fort Worth, Texas-based Travelocity.com Inc.

But Haroche said he wants to get out of hosting and share the inventories over the Web. Hosting is difficult, he said, adding that he would rather create a standard interface so Liberty Travel's customers can access the different travel options themselves. ▀

LEGACY LINKS

Web services are helping travel firms link systems that couldn't talk before.

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companies trust HP OpenView to
anticipate, prioritize and fix problems
before they impact business



Continued from page 1

Offshore

As a result of the escalating tensions, CCC has had discussions with Cognizant about the latter's backup and recovery schemes and its ability to move people to locations in the U.S., including to CCC's facilities if need be, at short notice.

"We are very anxious to maintain our relationship with Cognizant," Beattie said. "But the situation in India has certainly changed the risk profile" associated with doing projects there, he said.

Baltimore-based asset management firm T. Rowe Price Associates Inc. has outsourced several projects to Covansys Inc. in Farmington Hills, Mich. Covansys does work for T. Rowe Price in facilities in both the U.S. and India.

Now, T. Rowe Price is looking at how much it will cost to conduct some of the work in India out of Covansys' facilities in the U.S. "In the worst-case scenario, our plan is to use their off-site resources [in the U.S.] to complete our offshore projects," said Ram Mouli, vice

president of technology planning at T. Rowe Price. "We are looking at how the rates will increase" by doing that, he added.

Kingsport, Tenn.-based Eastman Chemical Co. already has contingency plans to bring offshore work back in-house, if it has to, said Jerry Hale, vice president and CIO of the firm.

All Talk So Far

But despite the clearly heightened concern, no one is talking about pulling out of projects in India yet, insisted executives at several Indian software companies.

"People are more keen to understand our business continuity and disaster recovery plans," said Phaneesh Murthy, a vice president at Infosys Technologies Ltd., a Bangalore, India-based company whose clients include Fidelity Investments, Visa International Inc. and J.C. Penney Co.

"But so far none have told us of any change in their plans; for most, its business as usual," said Kumar Mahadeva, CEO of Cognizant.

That concern is prompting a flurry of activity by Indian vendors, however, which are seeking to reassure jittery U.S.

Contingency Planning

Tips for U.S. companies with outsourcing investments in India:

DEVELOP a comprehensive set of contingency plans, including alternative telecommunications paths with business partners and the ability to bring outsourced work in-house or transfer it to another third party.

COMMUNICATE frequently with business partners in India to ensure that they are taking all the steps needed to deliver programming and other services to your organization.

CONDUCT a full risk analysis of doing business in India and other regions, including an overview of the IT infrastructures, labor pool, political climate, costs, turnaround time and ability to react quickly to changing events. Weigh those risks against the costs of doing business in India and elsewhere.

ENSURE that source code remains in the U.S. and that business partners in India are able to access the code while maintaining the filters to secure it.

DETERMINE whether contracts allow you to transfer work from an offshore project to another location or back in-house without severe financial penalties.

EVALUATE other potential geographic markets to outsource work, including the U.S., Eastern Europe, Israel, Ireland, China, Singapore, Russia, Mexico and Puerto Rico.

SOURCES: GIGA INFORMATION GROUP INC., CAMBRIDGE, MASS.; META GROUP INC., STAMFORD, CONN.

clients about fallback plans in case of an all-out war. Many, such as Cognizant, have drawn up elaborate contingency plans for their customers, outlining specific steps that will be taken to quickly move people and processes to safe locations if war breaks out.

India's largest software house, Mumbai-based Tata Consultancy Services, has been

stashing away a large number of visas that it can use to send programmers to Europe or North American facilities in "the blink of an eye," said Jim Thomas, a vice president at Tata's Dallas office.

Others, such as Covansys, are accelerating plans to ramp up capacity in the U.S. to handle work now being handled in India, if that becomes necessary.

India is one of the most popular destinations for offshore software development work. Scores of U.S. companies have ongoing projects in the country, while some, such as General Electric Co., Target Corp. and Ford Motor Co., have full-fledged software development centers.

Currently, about 185 Fortune 500 companies and more than 220 Global 1,000 companies outsource technical services to India, according to India's National Association of Software and Service Companies.

Many U.S. retailers are using Indian programming shops for maintenance work on customized software packages. And they're "thrilled to death" with the results, said Cathy Hotka, vice president of IT at the National Retail Federation, a trade association in Washington.

"Anything that impacts their ability" to get that work completed "will have a ripple effect throughout their IT shops," she said. ▀

OFF-PUTTING OFFSHORE

The threat of war could compromise India's long-term future as an offshore IT center.

 **QuickLink: 30398**
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Continued from page 1

Smart Cards

Moreover, millions more cards will be offered to airlines' "registered travelers" — frequent fliers — which may help speed check-in times. The Transportation Security Administration said it doesn't have a cost estimate.

The U.S. Department of Defense, meanwhile, is in the process of issuing 4.3 million secure smart cards to its personnel at a rate of 7,000 per day. The program may be mirrored in civilian agencies, with the potential deployment of millions more cards, federal officials said.

"There is a tremendous amount of momentum in the system toward smart cards," Paul Kurtz, senior director for national security at the White

Driving Smart

As federal agencies begin to embrace smart cards, the question of using smart cards for driver's licenses looms:

STATES' CHOICES: So far, no state is using smart cards as a driver's licenses. Instead, cheaper alternatives — bar codes and magnetic stripes — are in use. Eight states are using biometrics, including fingerprints.

CONGRESS' ROLE: A bill pending in the House would provide states with \$315 million to put biometric markers on an encrypted chip. No action is expected to be taken this year.

House's Office of Cyberspace Security, said at a Smart Card Alliance forum last week. Smart cards, if properly deployed, provide an excellent

means of security, he said.

The sheer volume of federal demand "will fuel the industry," said Randy Vanderhoof, CEO of the Princeton Junction N.J.-based Smart Card Alliance Inc., an educational and advocacy group made up of vendors and end users. Federal purchasing will bring in more vendors and drive down infrastructure costs, he said.

Moreover, the federal push could improve card interoperability. Smart-card vendors must adhere to interoperability standards set by the government in order to get that business.

"We don't want to be tied to a single vendor," said Mary Dixon, director of the Pentagon's smart-card effort. "We wanted to be able to use anybody's card, anybody's readers, anybody's middleware."

But it's by no means certain that lower equipment costs

and improved interoperability would make biometric smart cards attractive to businesses. Only about 1% of U.S. companies use secure smart cards, according to the Smart Card Alliance.

Awaiting Impetus

Private-sector use is "all about the value that people perceive in the product," said Jeff Staples, an Aldie, Va.-based smart-card consultant. It's difficult for the private sector "to place a premium on that security unless they have a real or immediate threat," he said.

In its most recent figures for 2000, IDC in Framingham, Mass., reported enterprise smart-card spending of only about \$46 million. With the decline in IT spending last year, IDC isn't expecting big growth in those 2001 numbers, said IDC analyst Charles Kolodgy. Private-sector bene-

fits will depend on the speed of the federal rollout, he said.

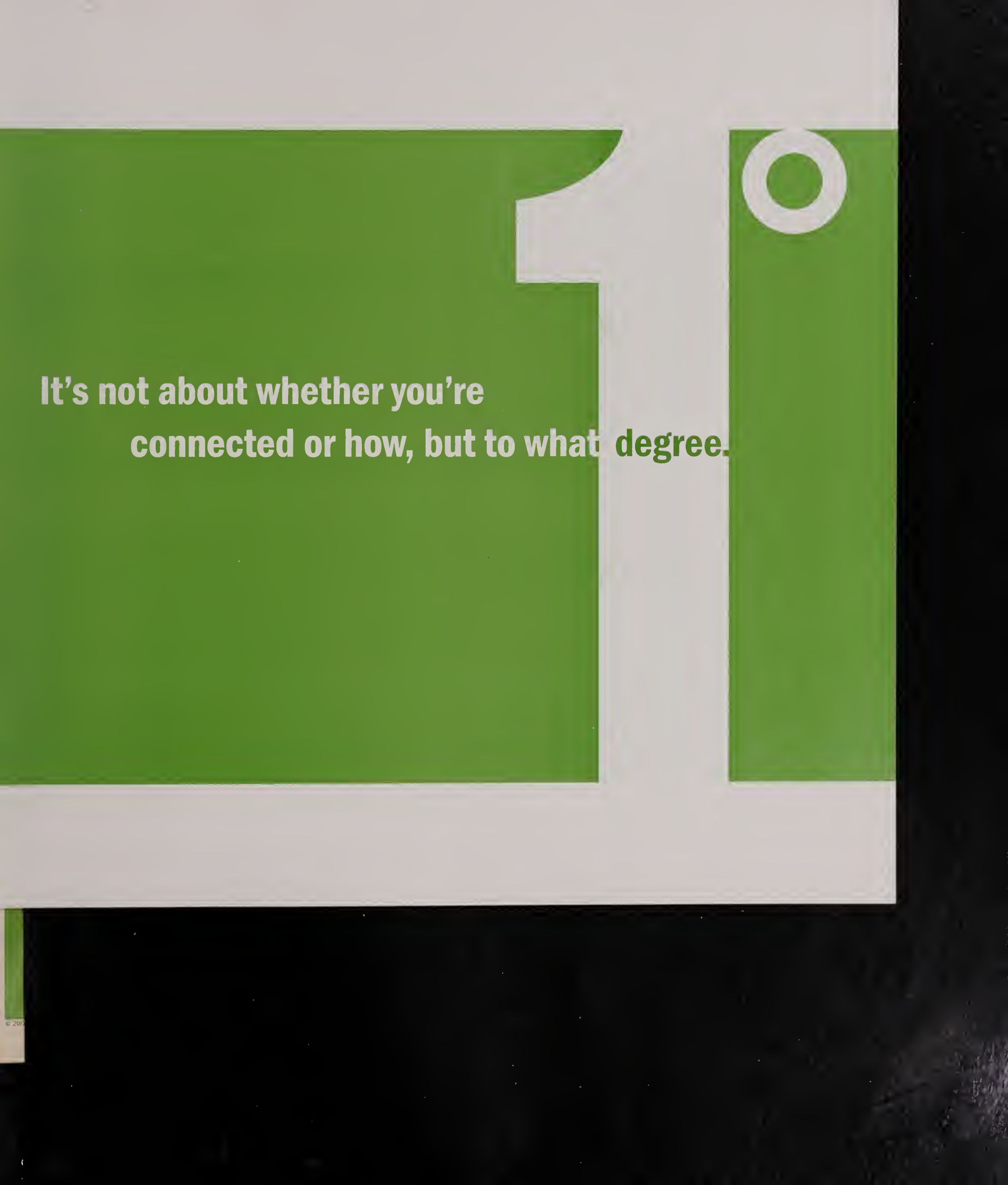
The cost of smart cards can vary considerably. The Defense Department is spending about \$40 per card, a figure that includes infrastructure. Industry experts say the per-seat cost can reach \$200, depending on software, biometrics, depth of systems integration and card-monitoring ability.

The Transportation Security Administration plans to begin pilot testing its Java-based, 32KB smart-card system possibly by late summer at several major airports and seaports, an agency official said. A fingerprint is expected to serve as the biometric identifier. ▀

NADER VS. MICROSOFT

Adoption of smart cards isn't the only way the government can influence private-sector IT. To learn more, visit our Web site:

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degree of separation.

XML Web services will take you there. The next evolution of business on the Web is here. XML Web services offer programmable and reusable technologies that leverage the flexibility of the Internet. Now you can have constellations of connected applications running on multiple platforms delivering information to all your customers, businesses, and employees. And the best way to build and deploy XML Web services is with .NET connected software from Microsoft.

.NET connected software ties it all together.

XML Web services are based on a set of common open standards including XML, SOAP, WSDL, and UDDI, as defined by the World Wide Web Consortium (W3C). Working with Microsoft® .NET connected software means using industry-standard protocols that unify your legacy code, systems, and applications and unlock their value. Finally, your enterprise can act as a single interoperable whole.

Delivering a clear path from code to client.

Many promise a path to XML Web services, but only .NET

connected software from Microsoft offers you a complete set of tools, servers, and applications for transforming your business using your existing infrastructure. One software solution takes you all the way from code to client.

"If one word best represents the past year's most significant news story in software development, it would be .NET. If you were to look for two words, they would be 'Web services.'"

—SD Times, "Web Services, .NET Highlight 2001," Alan Zeichick, 1/1/2002

► **All you need to create and use XML Web services:**

- **Microsoft Visual Studio® .NET and the .NET Framework—the tools to build them**
- **The Microsoft Windows® Server Family—the platform on which to run them**
- **.NET Enterprise Servers—the application servers to deploy them**
- **Microsoft Office XP and the Office XP Toolkit—the applications in which to experience them**



pipe dream and pipeline.

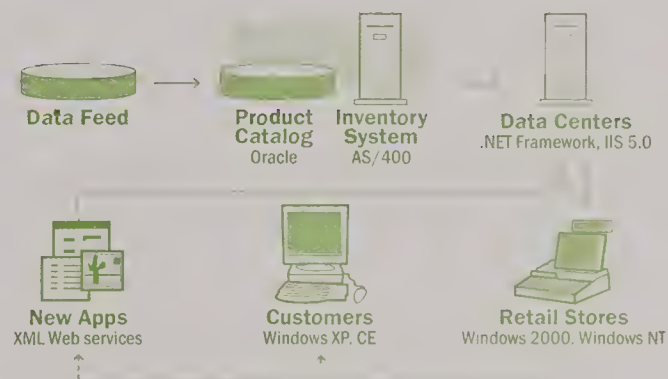
Where your CEO's vision meets IT reality. It's one thing to map out the future. It's quite another to unlock the value in your infrastructure that will get you there. Fortunately, XML Web services built with .NET connected software make it a lot easier to connect the code and systems you already have to each other—and to the new stuff you need.

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Your code and systems are completely connected.

For example, rich customer data may currently exist in multiple databases and applications, requiring your sales organization to access multiple sources to build an account profile. By using XML Web services, you can unlock that data and make it available through a single portal targeting multiple clients, such as laptops or handheld devices. To find out how Microsoft achieved this in 100 days for its own sales force, visit microsoft.com/enterprise

How Trans World Entertainment cued up a new consumer brand in just six weeks. Using .NET connected software, they are connecting their 650 FYE retail music and video stores in 46 states; 25,000 in-store listening and viewing stations to servers housing 200,000 audio tracks and 10,000 movie trailers; and their Web customers to personalized content at FYE.com.



“.NET has enabled us to achieve widespread brand distribution across a broad range of touch points.”

—Mark Hogan, VP of Marketing, Trans World Entertainment



fences and freedom.

Your isolated data becomes shared intelligence.

Today, much of your data sits locked away in proprietary systems. .NET connected software helps you open the gate. You have a common language for integrating data and applications, so information flows across intranets and extranets to those who need it.

"We've already seen significant incremental revenues and expect the trend to continue as we leverage the .NET platform to strengthen and extend our business model."

—Peter Osbourne, Group Manager, Advanced Technology Group, Dollar Rent A Car

The result is a far more flexible infrastructure — one that reduces the separation between the elements of your business to just one degree. By connecting your customers, business partners, and employees directly to the intelligence they need, you streamline operations and make your business more agile, responsive, and productive.

► **Connecting your data to your customers.** .NET connected software lets you build flexible, seamless connections between your back-end data and front-end systems. This allows you to close the loop with your customers, deliver more relevant content, and build more dynamic relationships.

► **Connecting business partners to you and to each other.** .NET connected software helps you first integrate your own applications, and then quickly and cost-effectively integrate your systems with those of your business partners, vendors, and suppliers.

► **Connecting your employees to business intelligence.** .NET connected software makes it much easier to let employees unlock the information value stored in your infrastructure. Not only will they have access, they can also begin using powerful analytical tools to empower themselves and others.

One degree between you and
your customers



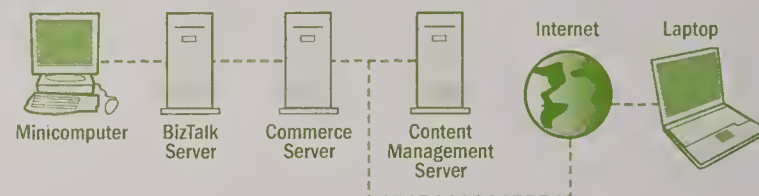
your business



your employees

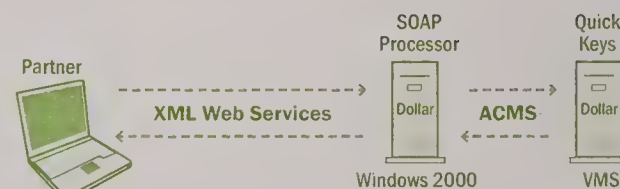


► ROYAL CANADIAN MINT



Solution: Microsoft Windows 2000 Advanced Server • Microsoft SQL Server™ 2000 Enterprise Edition • Microsoft Commerce Server 2000 • Microsoft Content Management Server 2001 • BizTalk Server 2000

► DOLLAR RENT A CAR



Solution: Windows 2000 Server • Microsoft Internet Information Services 5.0 • SQL Server 2000 • BizTalk Server 2000 • Visual Studio .NET • Microsoft Mobile Internet Toolkit

► COMPUSA



Solution: Windows 2000 Advanced Server • SQL Server 2000 with Analysis Services • ProClarity reporting client for store managers and corporate staff • MATRA Systems solution for importing data from IBM POS systems into SQL Server

How Royal Canadian Mint used .NET connected software to create new revenue streams. Founded in 1908, the Royal Canadian Mint was looking for new and better ways to reach out to customers for its evolving catalog of precious metal collector coins and jewelry. With .NET connected software they were able to create a next-generation e-commerce site that delivered dynamic content management, personalization, and advanced business analytics while drawing on information in a legacy database and feeding orders through an existing ERP system. Microsoft BizTalk® Server 2000, with native XML support, integrated the data seamlessly for smoother transactions and more efficient order processing. To see a webcast on redefining the online enterprise, visit microsoft.com/solutions/msib

How Dollar Rent A Car used .NET connected software to drive new business partnerships. Dollar Rent A Car is a world-leading car rental agency, with a fleet of 75,000 cars and more than 250 locations across 26 countries. They saw that integrating their VMS-based reservation system directly with partners would drive sales and reduce the cost of transactions. Using .NET connected software and BizTalk Server, they were able to develop an XML-based trading partner integration solution in weeks rather than months—a 75 percent reduction in development time. The same solution also helped Dollar to significantly reduce transaction costs with its partners. To get a resource and evaluation kit for this case study, go to microsoft.com/business/casestudies/b2c/dollarrentacar.asp

How CompUSA used .NET connected software to accelerate business intelligence. CompUSA had 228 retail stores, a services division, corporate sales, and a training division. Moving forward, they wanted to maximize the value of customer and sales data stored on a reporting system on an AS/400; an SAP system running on SQL Server 2000; Oracle databases; and several custom solutions. Using .NET connected software, CompUSA was able to extract their POS data and consolidate it in a central data warehouse where it can be analyzed in near-real time. So, store managers can see what adjustments are needed to meet opportunities as they arise. To see a video report on this story, go to microsoft.com/SERVERS/evaluation/casestudies/compusa.asp



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Microsoft®

Clusters Give Users Supercomputer Power

BY JAIKUMAR VIJAYAN

Early users of new clustered systems from Dell Computer Corp. last week said the ven-

dor's use of Intel-based servers to deliver supercomputerlike performance is proving to be a good way to reduce hardware

costs and improve scalability.

Dell announced its high-performance computing clusters technology in February. The

company is bundling its PowerEdge servers with specialized clustering and message-passing software from MPI Software Technology Inc. in Starkville, Miss., and Paralogic Inc. in Bethlehem, Pa.

The bundles come configured with 16 to 128 processors and can be tied together to build very large systems for use in scientific research, financial modeling and data-intensive business applications.

For example, Paris-based Compagnie Generale de Geophysique (CGG) used Dell's technology to build a 3,072-processor cluster that analyzes seismic data for oil companies.

Derrick Deaton, an executive vice president at CGG's Houston office, wouldn't disclose pricing information. But he said the cluster is delivering performance that's comparable to the throughput of special-purpose supercomputers, at roughly a quarter of the cost.

"The fact that you can tie so many [servers] together so inexpensively allows you to get generally the same processing power," Deaton said.

That's why Sandia National Laboratories in Albuquerque, N.M., is using a 128-node Dell cluster to try to simulate the impact of nuclear weapons.

Examining the Advantages

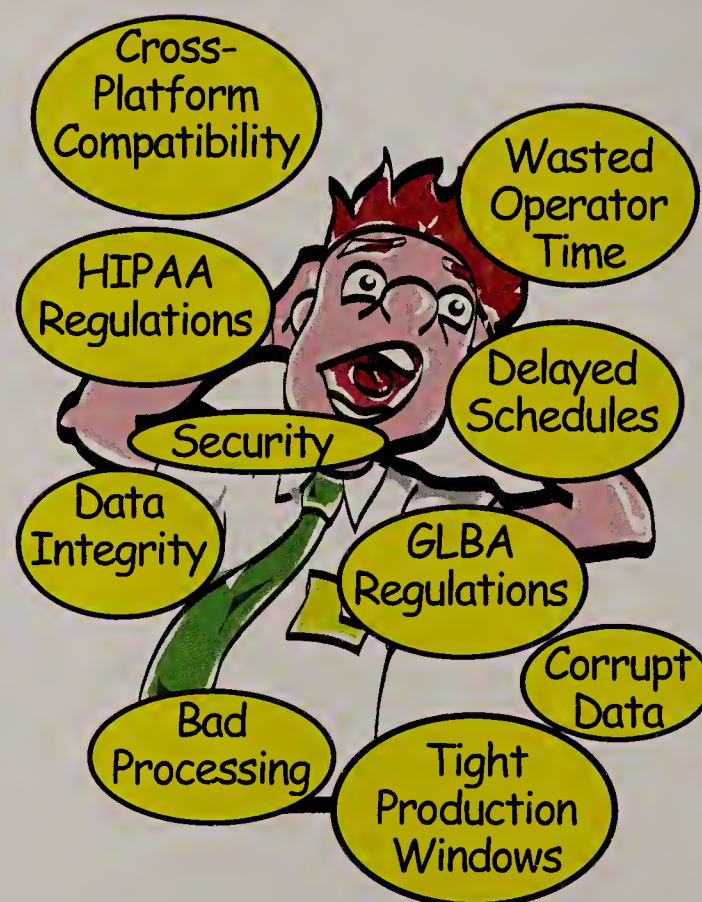
Apart from the lower costs, the fact that such clusters can typically be built and put into use much more quickly than traditional supercomputers is a big advantage, said Milt Clauser, a principal member of Sandia's technical staff.

But Deaton said users need to be aware that the clusters can occupy considerably more space than supercomputers and generate a lot of heat.

The increasing availability of open-source clustering and parallel computing software and the growing power of Intel Corp. processors are making high-performance clusters increasingly feasible, said Dan Kusnetzky, an analyst at Framingham, Mass.-based IDC.

IBM offers tools that help users assemble large Intel-based clusters, Kusnetzky said. And Hewlett-Packard Co. plans to harness commodity servers internally to offer utilitylike computer services to customers, he added. But thus far, Dell is offering the most formal program for building the clusters, Kusnetzky said. ■

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BRIEFS

IBM Plans Charges Of Up to \$2.5B . . .

IBM said it plans to take restructuring charges of up to \$2.5 billion, primarily during the current quarter. That could result in a loss for IBM, which reported lower-than-expected results for the first quarter. Among the moves announced by IBM last week was a layoff of 1,500 workers at its microelectronics unit, which will decrease that operation's workforce by 7.5%.

. . . And Signs Disk Deal With Hitachi

IBM and Tokyo-based Hitachi Ltd. finalized a deal under which Hitachi will take control of IBM's disk drive operations. Hitachi will pay \$2.05 billion for a 70% stake in a new joint venture and then assume full ownership after three years, the companies said. Talks about a separate deal to jointly develop storage systems and networking technology are continuing, they added.

Oracle Trims App Development Staff

Oracle Corp. disclosed that it cut 200 developers from its business applications unit, reducing the company's overall development staff by about 2%. The layoffs stemmed from a reorganization announced in March. CEO Larry Ellison said separately that Oracle expects to meet financial expectations for its fourth quarter ended May 31.

Microsoft, SEC Settle Accounting Charges

Microsoft Corp. and the Securities and Exchange Commission settled charges that the company violated accounting rules and misstated its profits in various quarters from 1994 to 1998. The SEC found that Microsoft committed multiple violations, but the company wasn't fined or forced to restate its earnings.

Sun Moves to Open Up Its Portal Software

Will tie to rival app server, OS technology

BY MICHAEL MEEHAN

SUN MICROSYSTEMS Inc. last week announced that the next version of its portal server software will work with rival application servers and support operating systems other than Solaris, although those features won't be in the initial release.

Part of the strategy behind the portal move is some real-politick marketing by Sun. BEA Systems Inc. and IBM dominate application server sales, and each had a 34% share of that market last year, according to a report released in March by Cambridge, Mass.-based Giga Information Group Inc.

"Pure and simple, we need to sell into those installed bases," said John Fanelli, director of product marketing for Sun's

communications and portal products. Links to the application servers developed by IBM and San Jose-based BEA are due to be added to the upcoming Sun ONE Portal Server 6 release by year's end (see box).

Expansion Strategy

Sun's own application server, originally part of its iPlanet line and renamed the Sun ONE Application Server in April, was a distant third in market share, with 7% last year, according to the Giga report.

Sun is trying to boost usage of its application server by bundling the software with its new Solaris 9 operating system [QuickLink: 30070]. But Fanelli said the company now plans to compete in the software market on a product-by-product basis instead of treating the

Sun ONE line as a suite.

Robert Lerner, an analyst at Current Analysis Inc. in Sterling, Va., called the plan a smart move on Sun's part. "Customers are not going to be locked into proprietary solutions, and Sun seems to be getting the message," he said.

Giga analyst Laura Ramos agreed that multiplatform support is a necessary step for Sun, at least in the portal server business. "It will certainly help them close deals," she said. "It's not going to come up as a disqualifier anymore."

Sun said it plans to make the portal server available on Linux and Windows 2000 next year. The software, which provides end users with a common Web-based launching pad for different applications, now runs only on Solaris.

Other new features include an identity server that will let users restrict portal access,

Sun's Portal Phases

AUGUST: General release of Sun ONE Portal Server 6 with identity management capabilities and other features.

DECEMBER: Compatibility with BEA's WebLogic and IBM's WebSphere application server software packages.

FIRST HALF OF 2003: Support for running the portal software on Linux and Windows 2000 systems.

along with Java tools that maintain end-user session information between a portal and various application and Web servers to allow single sign-on capabilities. Web services support will also be part of the offering.

Lerner said IBM has already added multiplatform support to its portal software. He noted that IBM, BEA, Sun and, to a lesser extent, SAP AG have managed to muscle into the portal market at the expense of smaller vendors that focus solely on that technology. ▀

Stacy Cowley of the IDG News Service contributed to this story.

IBM Beefs Up Database Management Line

Rollout includes self-managing tools

BY MARC L. SONGINI

IBM last week announced plans to ship 20 new or upgraded database management tools in a bid to bolster its competitive position in that market, where the company is still a relative newcomer.

Following through on a promise made at a user group conference last month [QuickLink: 29841], IBM detailed a pair of self-managing tools for administering the Windows, Unix and Linux versions of its DB2 database. One tool analyzes DB2's performance and recommends tuning changes, and the other handles database recovery procedures.

IBM also said it's developing several tools that will support multiple versions of DB2 as well as Informix Dynamic Server (IDS), which the company bought last year as part of its acquisition of Informix Corp.'s database operations. In addition, IBM is rolling out 15

AT A GLANCE

New Toolbox

SELF-MANAGING UTILITIES: Two products for automating DB2 performance-tuning and database recovery. Both are priced at \$8,000 per processor.

MULTIPLATFORM TOOLS: Data extraction, table editing and Web-based querying software for DB2 and IDS. Pricing starts at \$3,500 per processor.

MAINFRAME DB2: New products include performance management and SQL query analysis tools. Capacity-based prices start at \$2,620 and \$1,310, respectively.

database utilities for the version of DB2 that runs on its zSeries mainframes (see box).

IBM entered the database tools market just 18 months ago, but it now offers 60 management products, said Jeff Jones, director of strategy for the company's data management solutions unit. The new tools are designed to make it easier for database administrators to work with DB2 and reduce internal costs, he noted.

Wayne Kernochan, an analyst at Aberdeen Group Inc. in Boston, said IBM isn't blazing any new technology paths with the products it highlighted last week. Rivals such as Islandia, N.Y.-based Computer Associates International Inc. and Houston-based BMC Software Inc. already offer similar tools, Kernochan said, noting that CA

has been working on automating its database management tools for the past several years.

However, Kernochan said that IBM has done a good job with its new management utilities. IBM had no choice but to offer Informix users some database tools to help reassure them of the long-term viability of the IDS software, he said.

Joseph Burns, a senior database consultant at insurer Highmark Inc. in Cranberry, Pa., said at last month's International DB2 Users Group conference in San Diego that he thinks IBM's database tools are now competitive with rival offerings on functionality.

IBM said the self-managing performance-tuning tool is scheduled for release late next month, and the database recovery product will follow in September. The mainframe DB2 utilities and the mixed tools for DB2 and IDS are due before the end of next month. ▀

PATRICIA KEEFE

Trustworthy IT

TRUST HAS BECOME THE RAREST of virtues these days. Even the briefest scan of recent headlines must force the conclusion that we as a nation are severely deficient in trust right now.

Scandalous corporate behavior runs rampant. So much so that one recent business magazine cover story blared "Memo to CEOs: Why nobody trusts you anymore and what you can do about it." There's a lot to be addressed. There's the conjoined Enron and Arthur Andersen scandals, which devastated two once-respected companies, sinking the careers and livelihoods of many decent people. The Securities and Exchange Commission has probed *how many* companies for questionable accounting practices in the past quarter? It just settled with Microsoft, which for some is the poster child for untrustworthiness. Also under the microscope are numerous brokers and investment bankers who allegedly issued biased stock ratings about dot-com companies that they were promoting or courting. Online businesses are rewriting their privacy policies at the expense of consumer rights, undermining talk of industry self-policing.

On a national level, many people have lost trust in government as the chorus of who knew what, when prior to 9-11 grows ever more strident.

High-tech has hardly been immune. Outsourcing and obtuse licensing plans have IT workers and users up in arms. The state of California's investigation of its \$95 million contract with Oracle has allegedly caused other potential customers to take a harder look at the company and its contracts.

Closer to home, corporate IT is wrestling with its own trust issues. Some organizations are still recover-



PATRICIA KEEFE is editorial director at *Computerworld*. You can contact her at patricia_keefe@computerworld.com.

ing from distrust on the business side created after billions were spent on Y2k remediation, and then nothing went wrong. Budget requests were already falling under greater scrutiny when the recession kicked in.

Project management is another critical high-wire act, and one that many IT departments

still do badly, which ruins trust among users. Take the U.S. Navy's \$6.9 billion N/MCI intranet program [QuickLinks: 29843, 30073], which is reportedly riddled with user dissatisfaction. Our sources have blamed lack of planning, mismanagement and fierce internal resistance to the program.

Users are the ones who pay the price when projects go awry. But IT also loses. A recent Pivia white paper notes that external customers

vote with their feet, but internal customers stick around and express their dissatisfaction with you and your managers.

A new breed of project managers is rebelling against traditional process-heavy methodologies that can isolate people and foster distrust. Instead, these folks are using "extreme project management" — an iterative approach that stresses communication and collaboration. Business stakeholders define the project, set the tone, stay involved and make the decisions from beginning to end. If the project is going to be late or over budget, IT people and business people know it at the same time. There's no opportunity to hide the truth, so trust is a given.

How's that for plain old common sense? And the payoffs are tremendous even if, and especially if, the project stumbles.

An investment in this methodology will be well worth the effort. Trust is both a difficult and delicate matter. It's tough to establish, and you can lose it in a nanosecond. It's foolish not to explore any avenue to gaining trust. And any move you make in that direction is certain to have the added bonus of winning IT respect as well. ▀

PIMM FOX

ASP Model Is Alive and Well

OUT OF THE ASHES of dot-com rubble good things grow. The "back-to-basics" rush characterized by IT budgets stuck in neutral belie an important truth: Without the hype, spending and dreaming about the Internet, we'd be stuck in a client/server world without efficient means to share information. A good example is the building trade.

In halcyon days, Buzzsaw.com, a venture-backed San Francisco-based start-up, was going to revolutionize the way buildings got built. The goal: to aggregate the design, construction and development of real estate projects. Not only would architects and construction managers share drawings and collaborate on building timetables, but construction catalogs would also be available via a Web interface.

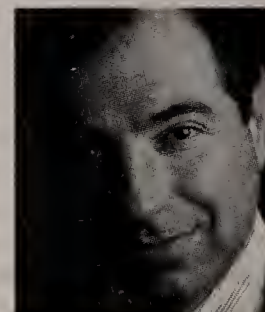
Blueprints, e-mail threads, project folders and schedules were to be hosted at a third-party site, setting the stage for the ASP model.

But like an architect trying to reach for the stars before the foundation has set, Buzzsaw.com tried to cut through too many traditional tasks without having all the pieces in place. The company displayed the traditional dot-com characteristics: revolutionary thinking without regard for the rich history and well-defined practices of the profession.

Autodesk Inc., which had a 40% stake in Buzzsaw.com, swallowed the entire company and its ASP model last July.

But now the future has caught up with the dream.

Architects Skidmore, Owings & Merrill LLP use Autodesk's Buzzsaw service to share drawings originally created in CAD applications. People in different offices mark up drawings,



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computerworld.com/columns

check project changes and send updates to team members without resorting to FedEx tubes, faxes or copy machines. There's even a digital camera at a work site that transmits pictures to an enterprise portal, so people can check construction progress.

Project managers don't wait a day for drawings, and there's less confusion about who's supposed to sign off on changes. Just as similar project management software helps enterprises streamline the chain of responsibility, using the ASP model for the building industry cuts out a whole layer of indecision and downtime.

But there remains a telling gap in the process. Municipal governments still don't work in the digital world when it comes to approving building designs and changes. The reason most often cited is that the building industry hasn't adopted this Web-based environment in the critical mass necessary to force government's hand.

But this will change as large developers such as Walt Disney use collaborative ASP technology to keep track of what is happening on-site as well as in the architect's office.

The dream was real. The Internet radicals just didn't give themselves enough time. ▀

DAVID MOSCHELLA U.S.-Europe Rifts May Spill Into IT

DURING PRESIDENT Bush's recent trip to Europe, it was hard to ignore the many rifts that seem to have opened between the U.S. and its most important political and economic allies. While disagreements with our friends in Europe are certainly not new, it's now becoming increasingly likely that some of today's antagonism will spill over into IT and Internet public policy issues. Indeed, serious IT policy disputes seem almost inevitable.

The nature of the divide has become entirely too familiar. Much of the European elite routinely characterizes the U.S. as arrogant, unilateralist, rash and unsophisticated. These criticisms tend to become particularly shrill whenever a Republican is in the White House. In contrast, many Americans believe that

the European emphasis on multilateral institutions and the complexities of culture and history is often really just an excuse for doing nothing, while having lots of long lunches in Geneva.

These basic cultural stereotypes would be amusingly irrelevant were it not for the fact that coordinated public policy is becoming an increasingly important IT industry factor. Major differences in regional policies, particularly in Internet-related areas, could easily become a serious barrier to global progress in technology. Consider the following three areas where the U.S. and Europe seem destined to disagree:

Online privacy. The European Union recently deemed the U.S. financial industry's "opt-out" privacy rules inadequate and not in compliance with the EU's "opt-in" requirements. The EU is also investigating whether Microsoft's Passport Web authentication service violates European privacy law. Other



DAVID MOSCHELLA is an author and independent consultant. Contact him at dmoschella@earthlink.net.

potential areas of privacy policy disputes include spam, data retention requirements and cookies.

Internet taxation. While Congress has consistently supported a moratorium on Internet sales taxes, the EU has decided otherwise. Effective July 1, 2003, value-added taxes (VAT) will be applied to goods downloaded over the Internet, including software, music and

videos from U.S.-based companies. The Bush administration has complained and will likely raise the issue with both the Organisation for Economic Co-operation and Development and the World Trade Organization. In Europe, national VATs tend to add 15% to 25% to the prices of goods and services.

Antitrust law. The wake-up call here came last June, when, for the first time, the EU rejected the proposed acquisition of Honeywell by General Electric, two U.S. companies. All signs suggest that the EU will also likely have its own

view of the Microsoft antitrust situation. While U.S. courts have generally blessed Microsoft's software bundling, the EU is considering a requirement that the Windows Media Player be separated from Windows itself.

Copyrights, patents, spectrum allocation and global positioning systems are other areas of potential future disagreement. What makes these disputes so volatile are the different IT situations on each side of the Atlantic. In many market segments, U.S. IT companies are often much stronger than their European rivals, so the EU often has a relatively free hand to act. Certainly, few tears will be shed in Europe for any EU decisions that adversely affect U.S. firms. Even more worrisome, it's often the stricter Internet policy that eventually prevails, since it's difficult to have one set of rules in Europe and another in the U.S. If this pattern holds true, much of the IT industry's future will be determined in Brussels. Ouch!

So, bridging the current cultural divide may be more important than many of us realize. ▀

READERS' LETTERS

Figuring ITAA's Numbers

THANK YOU, Patricia Keefe, for seeing what we techies have said all along: There is no shortage of programmers [QuickLink: 29632]. In the past, if someone had most of the skills needed, he could get hired, but nowadays, you have to have exactly what's on the spec sheet. HR managers are looking for all of the skills, when the person can function with most of the skills. You write for *Computerworld*. Does that mean you don't know how to write for *Hot Rod* magazine? You're a reporter — the skill is there. You would just have to brush up on what you're writing about.
G.H. Nelson
Birmingham, Ala.

IT'S IRONIC that this year the ITAA lowered its estimate of new jobs to 1.1 million. Last year, it estimated 1.6 million new IT jobs, yet we actually lost 500,000. That is an error of 2.1 million. Does this mean

we will lose 1 million jobs this year? I think the ITAA is like a weatherman who continually forecasts rain. Under further investigation, you will find that he is sponsored by the umbrella manufacturers' lobby and that the ITAA is sponsored by industry groups that want to bring more H-1Bs into the U.S. to lower IT salaries.

M. Powell
Huntington Beach, Calif.

Figuring ROI Numbers

IWAS GLAD TO SEE the article "The Fuzzier Side of ROI" [QuickLink: 29281]. The drive to provide ROI numbers, based on fuzzy numbers and fuzzy logic, is part of the overall trend to evade responsibility for any downside of any decision. Investment in technology has two features. One is a return horizon that's longer than the technology horizon, which defies sound ROI (usually applied to projects having returns within two years). The other is the return to brand and customer

perception going forward, which is inherently fuzzy.

CEOs make bold decisions about their products and services based on their marketplace knowledge and strategic expertise. Few of these have a sound ROI associated with them. Suddenly, when technology comes into the picture, it's scary voodoo.

Driving the demand for ROI is the difficulty many technology company CEOs have making bold decisions, since they lack marketplace knowledge. There are three ways to explain it: shirking, cowardice or incompetence. All are ugly words, and easy to confuse with simply being wrong, which we all are from time to time.

David Eaves, CEO
Internet Security Corp.
Foster City, Calif.

OUR TECHNOLOGY consultancy recently conducted a survey on the productivity of IT departments for 100 companies in the U.S. and abroad and came up with an interesting revelation: Almost all of

them stated that IT is a "utility" organization, like water, gas or electricity. IT has a specific goal, to support business. It's not a profit center, but it's not a cost center either. It's an essential requirement to conduct business. The success or failure of IT depends on how well senior management values information. ROI isn't a relevant metric these days. Senior management and CIOs should stop playing Wall Street.

Rocky Termanini
Managing director
International Consulting Group
Cheshire, Conn.

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, *Computerworld*, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

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BUSINESS

THIS WEEK

IT POWER PLAY AT CALIFORNIA UTILITIES

Investor-owned energy companies in the Golden State are turning to IT to re-energize an industry known more recently for sky-high prices and rolling blackouts than for good customer service or promising profits. **PAGE 24**

CSO: LOFTY TITLE, BUT LITTLE POWER

Chief security officers may have a chief-level title, but they have little to show for it. Corporate politics, small staffs and growing friction between security chiefs and CIOs top the list of factors that render many CSOs ineffective. **PAGE 28**

LET'S MAKE AN OUTSOURCING DEAL

A tough economy and tight IT budgets are driving more users and vendors to the bargaining table, where fixed contracts are being shoved aside in favor of incentive-based pricing models. **PAGE 30**

A Buyer's Market

Here's what the tough economic climate has done to the going hourly rate for project managers who work for outsourcing companies:

SPRING 2000 SPRING 2002

\$110 to \$135 \$85 to \$110

SOURCE: DIGERATI SOLUTIONS LLC, BABYLON, N.Y.

CAREER ADVISER

Fran Quittel offers advice to a networking manager who wants to know what's in a title and to an IT worker whose company has delayed salary reviews but is offering stock options instead. **PAGE 39**

BART PERKINS

Discipline by Design

Poor buying decisions cost your company more than money. The size of your IT supplier portfolio demands that buying decisions be made as part of a disciplined enterprisewide process, guided by your IT architecture. Without that, countless uncoordinated buying decisions will create an infrastructure that's overly complex and too complicated to function effectively.

In addition, infrastructure complexity requires many wrappers and black boxes to enable communication among the various systems and databases.

One new CIO, for instance, found 56 general ledgers in 14 data centers on 24 mainframe/midrange platforms. Another IT executive at the company described what had happened this way: "We built this one good decision at a time." While each buying decision was good in isolation, the overall result was a disaster.

For most companies, the architectures the IT staff designed to meet strategic imperatives are not the architectures their procurement processes are buying. Uncontrolled buying decisions sabotage the best efforts to deliver a specified architecture for the following reasons:

- There's no defined process to coordinate thousands of buying decisions across the enterprise.
- The architecture and associated standards are rarely detailed enough to guide buying decisions. They don't identify a specific product to be acquired or describe the trade-offs of using alternatives.
- Underscrutinized products are frequently acquired for high-priority projects in order to meet non-negotiable deadlines.

■ Maverick buyers in IT and the rest of the business may contend that a weak process gives them the freedom to circumvent architectural guidelines and acquire technology from a favored vendor.

The buying process requires structure and discipline, much as development efforts require a systems development methodology. A buying-decision process establishes a framework to coordinate acquisitions across the enterprise. It relies on explicit architectural guidelines and requires that all buying decisions be checked against them. It defines consistent deliverables (such as standard contract terms and conditions) and requires stakeholder participation.

This process unifies the IT architecture

and its underlying infrastructure and provides the only effective screen to block products and services that don't adhere to your architecture.

To make your buying-decision process successful, you'll need to do the following:

- **Sell the importance of buying well to the organization.** IT and the rest of the business often focus on creating the next application. You must remind executives that most of the applications will be purchased rather than developed in-house. Buying decisions have become a significant part of the development process.
- **Get support from all CXOs.** A buying-decision process can be successful only if enforced consistently across the enterprise.
- **Get the CIO to control the process.** Nobody is better positioned to view the IT architecture and its impact on the business. The CIO has ultimate responsibility for ensuring that buying decisions support the architecture.
- **Create a centralized team to manage the buying process and assist those making decisions.** This team, typically made up of IT staff, may include representatives from other divisions, such as purchasing or legal.
- **Provide economic incentives.** Most buyers will help if

there's something in it for them, such as cost savings. For example, buyers purchasing a desktop office suite in a separate business unit will care far more about conforming to the corporate architecture if it enables them to buy that suite at a lower cost per seat.

Your infrastructure is the direct result of your buying decisions.

Without a consistent buying process, these decisions will be made without the necessary architectural guidance. You'll acquire applications, technologies and services that you never intended and some that you really shouldn't own.

If you consistently buy well, you'll have a chance to realize the architecture you designed. Buy unconsciously, and you'll get the architecture you deserve. ▀



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Now that the energy crisis has eased, the state's three investor-owned utilities are pushing ahead with big IT projects to secure their own futures.
By Melissa Solomon

IT AIN'T OVER YET. The lights are back on and prices have stabilized, but political and regulatory hurdles are still fueling the fires in California's energy industry.

At issue are details that could dramatically alter the way the industry is structured, including the reorganization of Pacific Gas & Electric Co. (PG&E), the design of the state's power market grid and an uncomfortably modest energy reserve.

"Don't let me lull you into the idea that we still aren't tight on supply in California," says Terry Winter, president and CEO of the California Independent System Operator (ISO), which controls the state's power grid. "We are."

But through it all, the state's three investor-owned utilities are trying to press on with business as usual and plan for life after the crisis. And IT plays a key role in each company's plans.

Southern California Edison (SCE) is

on a full-scale mission to simplify its IT infrastructure while exploring emerging technologies such as mobile field service systems. San Diego Gas & Electric (SDG&E) has plans to integrate its operations with Los Angeles-based Southern California Gas Co., which is also owned by SDG&E's parent company, San Diego-based Sempra Energy. And PG&E is undergoing a series of upgrades and replacements — including new customer information and enterprise application integration (EAI) systems, as well as nine rebuilt customer-care applications — all by the end of the summer.

Following is a look at how two debt-riddled companies, PG&E and SCE, are managing those changes in the midst of a still-turbulent market. (Because SDG&E had sold off its stranded assets, it was exempt from the retail price caps that prevented PG&E and SCE from raising customers' bills when wholesale prices spiked; therefore, it didn't face the same crippling debt as its counterparts.)

Regardless of the challenges, the utilities have some outdated IT systems, such as billing and customer information, that are mission-critical, so they have little choice but to concentrate on strengthening their infrastructures, says Jim Walker, senior energy analyst at Forrester Research Inc. in Cambridge, Mass.

"The most important thing is to get a bill out every month and make sure it's accurate," he says. "But that's easier said than done when the tariffs keep changing."

Striving for Simplicity

It wasn't just California residents and businesses that were left in the dark during last year's rolling blackouts.

State officials handed down a steady stream of emergency orders aimed at

Re-Energizing California

THE MARCH THROUGH THE CRISIS

■ September 1996: Gov. Pete Wilson signs a bill to open the state electricity market to competition.

■ March 1998: State's wholesale electricity markets open.

■ July 1999: SDG&E sells its generation plants, making it exempt from consumer price caps ordered under deregulation law. As retail prices rise with wholesale prices, customers' rates triple over the next year.

■ May 2000: Total energy costs for

the month average \$61 per megawatt-hour (MWh), up from 1998 and 1999 averages of \$33.

The California ISO declares the first of many Stage 2 emergencies (when energy reserves fall below 5%).

■ June 2000: Average monthly energy costs climb to \$167/MWh. Rolling blackouts are ordered in San Francisco during a heat wave.

■ September 2000: The CPUC caps rates for San Diego customers for three years.

■ December 2000: Average monthly energy costs skyrocket to \$317/MWh. The ISO declares the first of many Stage 3 emergencies (when reserves fall below 1.5%). The Federal Energy Regulatory Commission (FERC) orders a soft price cap of \$150/MWh, effective through April 2001.

The Clinton administration invokes emergency orders to force generators to sell power in California after they refuse state utilities on the grounds that they're credit risks. SCE, later joined by Gov. Gray Davis, sues the FERC for fail-

ing to ensure reasonable wholesale electricity rates.

■ Jan. 2001: The credit ratings of PG&E and SCE are downgraded to junk status, and the CPUC approves temporary rate increases of 7% to 15% for PG&E and SCE customers. The ISO orders rolling blackouts in northern and central California.

The Bush administration extends an emergency order forcing power companies to sell to California but warns that it's the last extension.



AS THE ENERGY CRISIS EASES, SCE CIO Mahvash Yazdi has big plans for the future but says limited finances mean that not all of those plans will see the light of day.

gaining control during the energy crisis. "Every regulatory decision that was made had [an IT] systems implication," says Mahvash Yazdi, CIO at Edison International and SCE, its utility subsidiary, both in Rosemead, Calif.

For instance, when the state ordered tiered rates and discounts to encour-

age lower energy consumption, SCE had to reprogram its billing systems to reflect the complex rate structure. Trying to get a leg up on the June 2001 deadline, SCE's IT department worked around the clock to write the new code, with help from its offshore development center in India. But the rates

kept changing and the code had to be revised continually.

"The third time was a charm, and we met the date, but we would not have been able to do that without our suppliers," including the offshore programming firm, says Jodi Collins, director of IT application services at SCE. "I can't think of one piece of IT that didn't get tried through this period."

SCE's IT leaders realize that while they made it through the worst, they need to sharpen the firm's infrastructure so it can more easily adapt to future adversity.

"We need to... become more agile," says Yazdi. "And we also need to simplify our environment so that we have fewer... more capable applications."

"Simplify" has become the mantra of SCE's IT department. But with 1,050 IT employees, 1,000 servers, 38TB of data, 700 applications and more than 70 million lines of code, the utility's IT leaders have been challenged just to get their arms around their infrastructure.

"We're talking about a huge portfolio," says Collins. "So we have redundancy, we have technology that's outlived its usefulness, we have areas where we have gaps in the technology."

Call to Action

As it turned out, one of SCE's simplification projects, its call center optimization effort, was actually buoyed by the energy crisis.

"We were starting the project when the energy crisis hit," says Collins. "At that time, we found this project to be on the critical path because of the deluge of calls coming in."

The new system reduced the number of screens operators used by one-third, and it added a caller ID and telephony/automatic routing system from Westlake, Calif.-based

Genesis Data Networks.

Collins' team shaved several months off the project so the system would be ready within a week after a new round of energy bills went out. Since then, SCE has cut its call center by 80 employees, trimmed 30 to 40 seconds off call times and seen a return of \$3 million per year on the \$6 million project, says Collins.

SCE is now in the midst of upgrading to Windows XP from a predominantly Windows 95 environment (a small percentage of employees use Windows 98), with a plan to begin deployment on more than 15,000 desktops in November. The upgrade should take about a year and a half, says Mike Pinter, director of IT infrastructure services. As various IT contracts come due, SCE is also looking to reduce the number of vendors it uses, he adds.

But as the utility looks to simplify its infrastructure, it's simultaneously trying to stay on top of emerging technologies, says Solomon Tessema, director of IT enterprise architecture and telecommunications and program manager of mobility strategy at SCE. Tessema says mobile computing will be the most important technology trend during the next five to 10 years, so he has created an enterprise mobility strategy program in which senior business unit leaders throughout the company are examining mobile devices, networks, requirements and systems integration strategies.

The list goes on. SCE's capital IT budget is up 30% from last year's and is expected to rise 13% in 2003, but when asked if all the plans are within SCE's reach, Yazdi doesn't hesitate. "No," she says. Specific projects that are already in the works have gone through an extensive ROI review, she

Continued on page 26

■ **February 2001:** The California Department of Water Resources (DWR) uses state bonds to begin buying energy (effective through December 2002) for the state's three investor-owned utilities. The DWR signs more than 50 long-term power deals to build the state's reserves.

■ **March 2001:** The state approves major retail customer rate increases. The first statewide rolling blackouts are declared during a Stage 3 emergency.

The ISO asks the FERC to in-

vestigate alleged overcharges by power generators. The FERC orders wholesale power sellers to justify their rates or refund tens of millions of dollars to the utilities.

Davis announces a 20/20 plan, offering consumers 20% rebates on their electric bills if they reduce consumption by 20%.

■ **April 2001:** PG&E files for Chapter 11 bankruptcy protection. The FERC tightens wholesale price controls.

■ **June 2001:** The FERC extends

California's price cap to spot market sales in California and the 10 states within the Western Systems Coordinating Council.

■ **September 2001:** PG&E files its bankruptcy reorganization plan.

■ **October 2001:** Retail market choice is suspended in California.

■ **January 2002:** California's attorney general files suit against PG&E, claiming it diverted billions from its regulated utility into unregulated affiliates. The compa-

ny's utility unit counters with a claim that the state violated the deregulation law when it refused to let the utilities sell power generated by the facilities it still owned.

PG&E and the CPUC take their rival restructuring plans to bankruptcy court.

■ **February 2002:** A federal judge rejects PG&E's restructuring plan. The state asks the FERC to review some long-term power deals, saying power sellers illegally drove up prices and forced the state into lengthy, unfair contracts.

■ **March 2002:** PG&E files its second revised reorganization plan. A U.S. Bankruptcy Court judge sets a June 17 date for PG&E's creditors to review rival plans from the utility and the CPUC.

■ **April 2002:** The CPUC submits a plan to restructure PG&E to federal bankruptcy court. PG&E denounces the plan.

The Foundation for Taxpayer and Consumer Rights, which tried to block the CPUC plan by filing a petition with the state Supreme

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Re-Energizing California

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explains, but she's had to cancel or postpone other projects.

"Financially, we certainly have been impacted by the energy crisis, and we have to prioritize where we're spending our dollars," Yazdi says.

'Fast Dinosaur'

After years of beatings in the press, a Chapter 11 bankruptcy protection filing and a stack of lawsuits, PG&E's IT department isn't shooting for Space Age sophistication.

"Our goal is to be a fast dinosaur. Or a slow mammal," says Roger Gray, CIO at the San Francisco-based utility.

Actually, the primary goal has been the same for several years, says Gray: to replace PG&E's customer information system (CIS). "It's our megasystem," he says. But every time he tried to replace the homegrown CIS, deregulation and the energy crisis put his plans on hold.

Getting the old system ready for deregulation was like trying to turn a '67 Chevy into a rocket sled, he says. But after years of tweaks and upgrades, the system has finally reached the end of its shelf life, says Gray.

"Whether we're in bankruptcy or not, we needed to replace the systems," says Gray, who adds that PG&E is now in the process of implementing a CIS platform built around San Francisco-based SPL WorldGroup Inc.'s CorDaptix product.

A smart move, says Walker. As PG&E's legacy system ages, the market is grow-

ing more complex, prompting the need for a more sophisticated system.

The utility is also installing an EAI system from Monrovia, Calif.-based SeeBeyond Technology Corp. That system, along with the CIS, is scheduled to go live at the end of the summer. In addition, PG&E is planning to launch a new human resources/payroll system next year and is pushing forward with a series of ongoing projects and upgrades.

Most of the projects, such as the new CIS, EAI and finance systems, will replace mission-critical systems that were designed for a utility that had little interaction with the public and never dealt with outside companies. And as PG&E competes for customers, it must, for the first time in its history, think about how to sharpen its customer service tools and operate more efficiently.

"We're spending more money this year on IT than I think we have in recent years," says Gray, who added that he's hiring more workers this year. PG&E's 2002 IT budget of \$350 million is expected to

rise by \$25 million and then return to normal in 2003, he says. "We've got so much work stacked up that we're literally working 24 hours," he notes.

But as PG&E attempts to emerge from Chapter 11, various unknowns create an assortment of logistical hurdles for its IT department. PG&E has spent much of this year duking it out in federal bankruptcy court with the California Public Utilities Commission (CPUC) over competing plans to reorganize PG&E. If it gets its way, PG&E Corp. and its utility subsidiary will be split into unaffiliated companies, with electric and gas distribution run by the

utility and electric and gas transmissions and electric generation controlled by the parent corporation.

Under this arrangement, about 80% of the IT department would go to the distribution firm, and the remaining 20% would serve the transmission and generation operations, explains Gray. He says he's not too worried about reassigning staff; the hard part is breaking up the systems and processes that were, in many cases, brought together when IT operations were centralized just a few years ago.

"I'm not sure if breaking companies up or merging them is easier," says Gray.

Take the utility's computer lab, for instance. It's in the midst of replacing

4,000 of its 20,000 desktop computers from a variety of vendors with 1.5GB PCs from Dell Computer Corp., explains Ron Dodson, a PG&E telecommunications technician. Meanwhile, PG&E is migrating from Windows NT to Windows 2000.

Workstation upgrades used to be handled by individual department, accord-

ing to Anna Carrancho, supervisor of computer telecommunications services for maintenance and operations. When PG&E centralized IT support two years ago, workers there feared that they'd never get new computers due to bureaucracy. But employees are finally starting to prefer the centralized approach, Carrancho says.

PG&E's central network and testing groups are in the midst of consolidating its SQL servers into a Dell storage-area network and replacing PG&E's old analog systems with microwave networks. The analog backbones, which don't have the capacity to sup-

port today's data systems, should be fully retired by 2004 or 2005, says Jeff Bennett, manager of network planning.

As these and other projects get under way, PG&E's round-the-clock Transmission Operations Center (TOC) has been trying to stay on top of its day-to-day work while coping with both internal and external changes.

The TOC communicates with the state ISO, which has controlled California's power grid since deregulation took effect in 1998. The ISO collects needed load and generation information from the various players in the state's energy industry to make sure supplies meet demand.

So unlike the other units within PG&E's IT division, the TOC hasn't been able to move forward with a systems overhaul because it must follow the ISO's lead — a situation foreign to a utility that has always operated independently. And to further complicate matters, even the ISO, which has yet to master the complex market, is unclear about its future vision for the systems that control the state's power grid.

"It's a feast-or-famine situation," says Steve MacCool, TOC lead senior systems dispatcher.

On May 1, the ISO submitted a market redesign plan to the Federal Energy Regulatory Commission. But "there are still a lot of uncertainties that need to be worked out," acknowledged Lorenzo Kristov, the ISO's manager of market design, during a recent press conference. ▀

ONGOING CHANGE

As SDG&E tackles the lingering effects from the California energy crisis, it's planning an operational integration with Southern California Gas that will affect IT for years to come.

 **QuickLink: 30335**
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Court, says the CPUC's plan illegally proposed to maintain excessive electricity rates to bail out PG&E.

California Attorney General Bill Lockyer files suit against four energy companies, charging that they helped engineer the state's energy crisis. State officials rework eight contracts with four power companies, cutting them from \$15 billion to \$11.4 billion.

State energy officials warn that energy supplies could be at risk if plans to build power production plants are dropped or postponed.

■ **May 1, 2002:** The ISO submits a plan for a revised market to the FERC, calling for extended price caps. Class-action lawsuits pile up on behalf of customers who want their money back from energy companies that inflated prices.

■ **May 6, 2002:** Internal Enron Corp. documents released by the FERC reveal that Enron traders created false congestion on California's power transmission grid.

■ **May 16, 2002:** The CPUC orders public hearings on SDG&E attempts to settle a dispute with

the commission over whether it must return to retail customers the \$425 million in profits it made during the energy crisis.

■ **May 21, 2002:** After CMS Energy Corp., Reliant Resources Inc. and Williams Co. admit to engaging in bogus trades to drive up their revenues, causing the Securities and Exchange Commission to widen investigations into energy industry trading, the FERC orders 150 energy producers to submit affidavits stating whether they participated in "wash trades."

State Sen. Joe Dunn (D-Garden

Grove), chairman of the Senate Select Committee to Investigate Price Manipulation of the Wholesale Energy Market, accuses the California ISO of asking traders to buy more power than was needed at above-market rates in November 2001. The ISO forms a special committee and hires an independent investigator to look into the charges.

■ **May 24, 2002:** CMS Chairman and CEO William McCormick resigns.

■ **May 30, 2002:** Lockyer files lawsuits against eight more energy companies.

■ **June 3, 2002:** The U.S. Supreme Court deals a defeat to Davis, ruling that the wholesale power contracts he took control of when state utilities could no longer honor them should have been voided. A hearing will determine how much the state must reimburse Charlotte, N.C.-based Duke Energy Corp., which brought the case before the high court.

■ **October 2002:** FERC-ordered price caps are scheduled to end; the FERC is scheduled to decide on an ISO redesign plan.



is it the wireless
infrastructure?
the wireless
enterprise?



or just a lot
of really
pertinent data.

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THE EXODUS BEGAN IN DECEMBER. Bruce Moulton, vice president of infrastructure risk management at Fidelity Investments in Boston, was let go. That same month, Steve Katz, chief security and privacy officer at Merrill Lynch & Co. in New York, accepted a buyout. And in April, shortly after his face appeared on the cover of *CIO* magazine, Michael Young, chief information security officer and principal privacy officer at State Street Global Advisors in Boston, lost his job in a company reshuffle.

The departure of these and other information security veterans from Fortune 500 companies reflects the beginning of turbulent times for chief security officers (CSO). Since Sept. 11, CSOs have faced new pressures to prove the value and effectiveness of their security measures, even as they struggle politically for legitimacy within their corporations and for support from the technology and business units they're trying to protect, say analysts.

"We're in a transition period, and the smart [CSOs] are getting out of the way," says David Foote, president and chief research officer at Foote Partners LLC, a management consultancy and IT job research firm in New Canaan, Conn. "They see the risks in trying to build in the next phase of security — moving from fragmented delivery of security technology to a coordinated, aggressive, well-conceived security program.

"They understand how long it takes to build attention and change the culture to make this next step, but they're not getting the support they need to brand and build this next level of security," says Foote, who is also a *Computerworld* columnist.

Uphill Battle

Corporate politics is the single biggest problem facing CSOs, according to some who hold such positions and industry analysts. Even though CSOs have attained a chief-level title, they report that they still generally lack enough power to be truly effective. And there's growing friction between the CSO, who usually has only a handful of people on staff, and the CIO, who has hundreds or, in some cases, thousands of people on staff, says John Pescatore, a security research analyst at Gartner Inc. in Stamford, Conn.

Because of these conflicts and the expanding role of information protection to encompass privacy, regulatory compliance and disaster recovery, firms genuinely don't know where to put the function of information security — if they have a formal management function at all, says Tracy Lenzner, CEO of executive security search firm Lenzner Group in Las Vegas. In fact, only 54% of 72 chief executives working for companies with at least \$1 billion in annual revenues said they have a CSO in place, according to a survey released in January by technology and strategy consulting firm Booz Allen & Hamilton Inc. in McLean, Va.

"Unfortunately, for many organizations I think that the executive-level positioning of CSOs will be heightened only when we're hit with a catastrophic event," Lenzner adds.

That's also the consensus among the unemployed

and employed CSOs who were interviewed for this story, all of whom say information protection has always been an uphill battle because it's difficult to prove its value unless a catastrophe occurs. As such, CSOs lack the power to do more than set policies and put out fires, says a CSO from a Fortune 100 technology equipment manufacturer who asked to remain anonymous.

"The greatest threat we face is the belief of senior management that there is no threat. So we don't get funds, money or resources, and without those things, you can never address security threats and risks," says another security officer at a global financial firm who's planning his exit strategy and starting a consulting practice.

Young says he believes some of these problems can be lessened if CSOs get on board with business initiatives and competitive strategies more consistently. "As a whole, CSOs still express security in technical terms instead of business terms," he says.

Katz, Young and Moulton, however, all speak the language of business and have driven information risk management throughout their former organiza-

tions. (As for his business savvy, Moulton thinks he might have worked himself out of a job by integrating security ownership into the business units themselves.) Similarly, Katz looks at security from the standpoint of business enablement, adding that risk management methodologies are no different from other processes of building business risk models for nontechnical offerings.

Another view of this upheaval in security leadership is that Katz, Young and Moulton have completed their work of championing security. They have laid the critical groundwork by building consensus; establishing best practices and awareness; and preparing business and technology units for compliance, liability, security audits and procedural forensics investigations. Now Katz and Young are offering these start-up services to smaller companies and home offices through consulting businesses, a path Moulton says he might also take.

The next phase of information protection involves becoming more technical in focus, say analysts.

"In the past, we measured our success by telling about the programs we put in place and the policies



THE DEPARTURE OF STEVE KATZ (right) from Merrill Lynch is a reflection of the increasing focus on the technical aspects of security.

we wrote. As we move forward, it's more about how well those policies are being implemented, how secure the systems are and what impact they're having," says Michael Ressler, director of security services at New York-based IT consulting firm Predictive Systems Inc. "And that means more technical background is needed for security management."

Booz Allen's survey cites three areas that chief executives are more focused on since Sept. 11:

- Seventy-five percent of respondents said they're more concerned with infrastructure protection.

- Seventy-one percent said they're more concerned with risk assessment.

- Sixty-nine percent said they're concerned about employee morale. At one Fortune 100 technology manufacturer, low morale is already translating into abuses by employees, according to its CSO, who says pornography Web surfing at the company is up 40%.

If Katz's replacement is any indication, some firms are already catching on to this more technical focus. Merrill Lynch's new chief of security and privacy,

David Bauer, has a highly technical background, as he was in charge of network management and engineering, including security engineering, at Morgan Stanley Dean Witter & Co. and then at Deutsche Bank.

But even with the best technology project management and business skills, these new technobusiness/security hybrids will run into all the same empowerment problems as their forerunners, says Thornton May, a senior member of executive advisory firm

Toffler Associates Inc. in Manchester, Mass., and a *Computerworld* columnist. To survive this upheaval, security executives must be strong in business and technology, he adds.

"Security professionals will need to understand the lingua franca of business,

which is accounting," he says. "They also have to be able to understand how the network works, how the application works and how the hardware works if they're to mobilize the security organization. Then they need to align their security strategy to where the business is going and tone their architecture and deployment to fit the financial plan of the company." ▀

WHAT'S IN A TITLE?

Executives with other titles also bear heavy responsibility for information security.

QuickLink: 30163
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MISSIONS AND MINEFIELDS

Key issues facing CSOs:

- Ongoing friction between the CIO, whose mission is to make the network hum while running large departments, and the CSO, who is seen as a business inhibitor and has only a handful of direct reports
- Lack of empowerment to get things done
- Flat budgets and increased security threats
- New demand to prove the effectiveness of security programs
- Mergers and acquisitions
- Increased physical security concerns as a result of the Sept. 11 terrorist attacks, which affect CSOs who have oversight for physical security as well as other CSOs who implement the technological solutions to mitigate such risks

What CSOs need to do to be effective:

- Form relationships and strategic alliances with corporate influencers in business units and in the auditing, IT and legal departments.
- Become business enablers by using security technologies that reduce overhead, provide better service and otherwise support business processes with better, faster and cheaper ways of getting things done.
- Take advantage of new assessment and benchmarking tools to help report the company's overall security posture, risk modeling and program effectiveness. (For more information, watch for our upcoming Knowledge Center on security in July.)
- Take accounting and business courses and get the Certification for Information System Security Professionals.
- Keep abreast of regulatory issues and bills before Congress.
- Be impeccable in appearance, articulation, writing and other forms of presentation.

SOURCES: Tracy Lenzner, founder of executive security recruitment firm Lenzner Group (www.lenznergroupp.com); John Pescatore, an analyst at Gartner (www.gartner.com); Mike Hager, vice president of network security and disaster recovery at OppenheimerFunds Distributor Inc. in New York; and the research report "How Corporate Security Is Reshaping the Post-9/11 CEO Agenda," by Booz Allen & Hamilton

The exodus of some renowned security executives marks the beginning of turbulent times for CSOs. By Deborah Radcliff

CHIEF SECURITY OFFICER

Wrangling Lucrative Deals With Integrators

Customers are shifting away from traditional fixed-price and time-and-material contracts to more flexible transaction and incentive-based pricing structures. By Jaikumar Vijayan

WITH COST a primary driver behind many outsourcing arrangements these days, a growing number of customers are shifting away from traditional fixed-price and time-and-material contracts to more flexible transaction and incentive-based pricing structures.

"There is a much greater sophistication in contract management and negotiations by users" than ever before, says Neal Dittersdorf, a partner at Washington-based law firm Venable, Baetjer, Howard & Civiletti LLP.

The most visible change in contracts with integrators is taking place on the pricing front, Dittersdorf says. Service providers are becoming more flexible in the way they package and price deals.

Driving many of the changes is the tough economic climate, says David C. Hollingsworth, director of enterprise applications at Watson Wyatt Worldwide, a human resources management firm in Washington.

"Vendors that were very cost-prohibitive for us in the past are coming back with completely revamped proposals to make sure they can at least get in the door," Hollingsworth says.

For instance, a proposal for a data

backup service that Watson Wyatt previously rejected as too expensive became more palatable after the vendor recently offered the same service using a more cost-effective technology, Hollingsworth says.

Tumbling Rates

The slowdown in IT spending is putting considerable pressure on vendors to drop prices while delivering

the same service levels as before, says Juergen Rottler, a vice president at Hewlett-Packard Co.'s services group.

Contract workers are settling for 20% to 30% lower rates for certain job skills these days compared with 2000, says Dan Hoffman, CEO of Digerati Solutions LLC, a Babylon, N.Y.-based systems integrator that provides engineering, desktop and project management contractors to financial services firms (see chart).

"Many [IT workers] have been laid off, so there's a surplus of resources. Companies are taking this as an opportunity to negotiate more extensively on prices," Hoffman says.

Customers are also beginning to more closely scrutinize the financial stability and viability of the companies they're interested in partnering with — not only before they sign on but also

during the course of a contract.

"We are looking a lot more closely at vendor funding and stability," Hollingsworth says. This means a lot more face-to-face communications and insistence on getting details of new business plans and ventures.

Here are some other factors that IT managers and analysts suggest considering when negotiating contracts with systems integrators:

- **There's no such thing as a one-size-fits-all pricing model.** Be prepared to mix and match as needed and choose wisely.

It's an approach that Nielsen Media Research in New York is considering for a long-term application outsourcing project with Cognizant Technology Solutions in Teaneck, N.J., to develop a data management system.

In structuring the contract, Nielsen is breaking the project into three phases — development, enhancement and maintenance, says CIO Kim Ross.

The first phase will be executed on a fixed-price basis, while the other two are likely to be structured under a variable, transaction-based model. Both parties are trying to estimate the cost of ongoing enhancements and maintenance, he says. But "the future phases are not legally bound," Ross says. This makes the contract more open-ended and flexible for both parties, Ross says.

- **Use service-level agreements and other quantifiable measures to make sure projects are being delivered on time and within scope.**

Nielsen, for instance, uses a technique called Function Point Analysis for estimating project size, managing change of scope and communicating functional requirements with Cognizant.

Nielsen may give Cognizant a project to develop a system with 2,000 individual functional points to develop, maintain and enhance. It then uses productivity modeling tools to estimate project requirements.

The approach gives both Cognizant and Nielsen hard numbers to base pricing on and to measure performance against, Ross says.

- **Have provisions that clearly spell out what happens to intellectual property and shared software and hardware in case a relationship has to end, attorney Dittersdorf says.**

- **When it comes to offshore outsourcing, choose the right applications to outsource and maintain constant communication with your vendor,** says Jim Beattie, chief technology officer at CCC Information Services Inc., a Chicago-based provider of networking services to the auto indus-

Rates for Techs

FIELD TECH: Responsibilities include maintenance and operational support for all desktops.

RATE

Spring 2000: **\$45 to \$55 per hour**
Spring 2002: **\$30 to \$40 per hour**

SYSTEMS ENGINEER: Responsible for planning and engineering of LAN/WAN infrastructure.

RATE

Spring 2000: **\$110 to \$150 per hour**
Spring 2002: **\$85 to \$110 per hour**

PROJECT ENGINEER - INFRASTRUCTURE: Duties include supporting project design activities for data and telecommunications infrastructure.

RATE

Spring 2000: **\$100 to \$125 per hour**
Spring 2002: **\$75 to \$100 per hour**

PROJECT MANAGER: Responsible for the management of large and complex projects. This person plans and coordinates project activities in terms of schedule, performance and cost.

RATE

Spring 2000: **\$110 to \$135 per hour**
Spring 2002: **\$85 to \$110 per hour**

SOURCE: DIGERATI SOLUTIONS LLC, BABYLON, N.Y.

try. Projects that involve short lead times or a high degree of collaborative effort between different business units aren't the best candidates to ship overseas. Those projects with longer development cycles make more sense to send abroad, he says.

- **Incentive-based pricing models benefit both parties.** For instance, an outsourcing vendor that gets paid by the number of help desk incidents it responds to every month will have little incentive to reduce the number of calls it fields — even if that would ultimately reduce its customer support costs, says Steve Dauber, a vice president at New York-based outsourcer Center Beam Inc.

But under a fixed-price model, says Dauber, the vendor makes money only by designing out underlying problems and reducing the number of help desk calls — a scenario that benefits both parties.

Says Dauber, "Instead of paying for activity, pay for results." ▀

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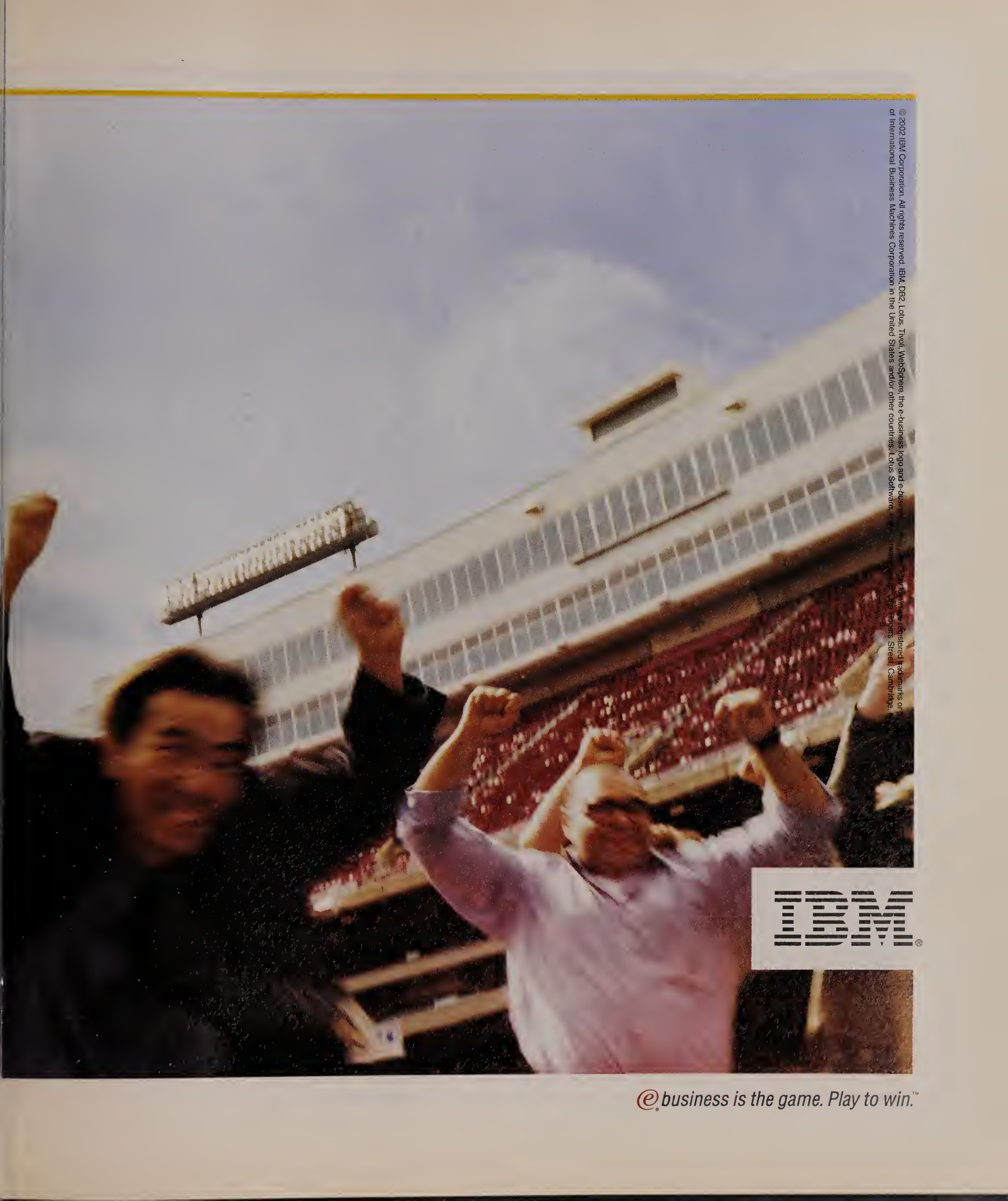
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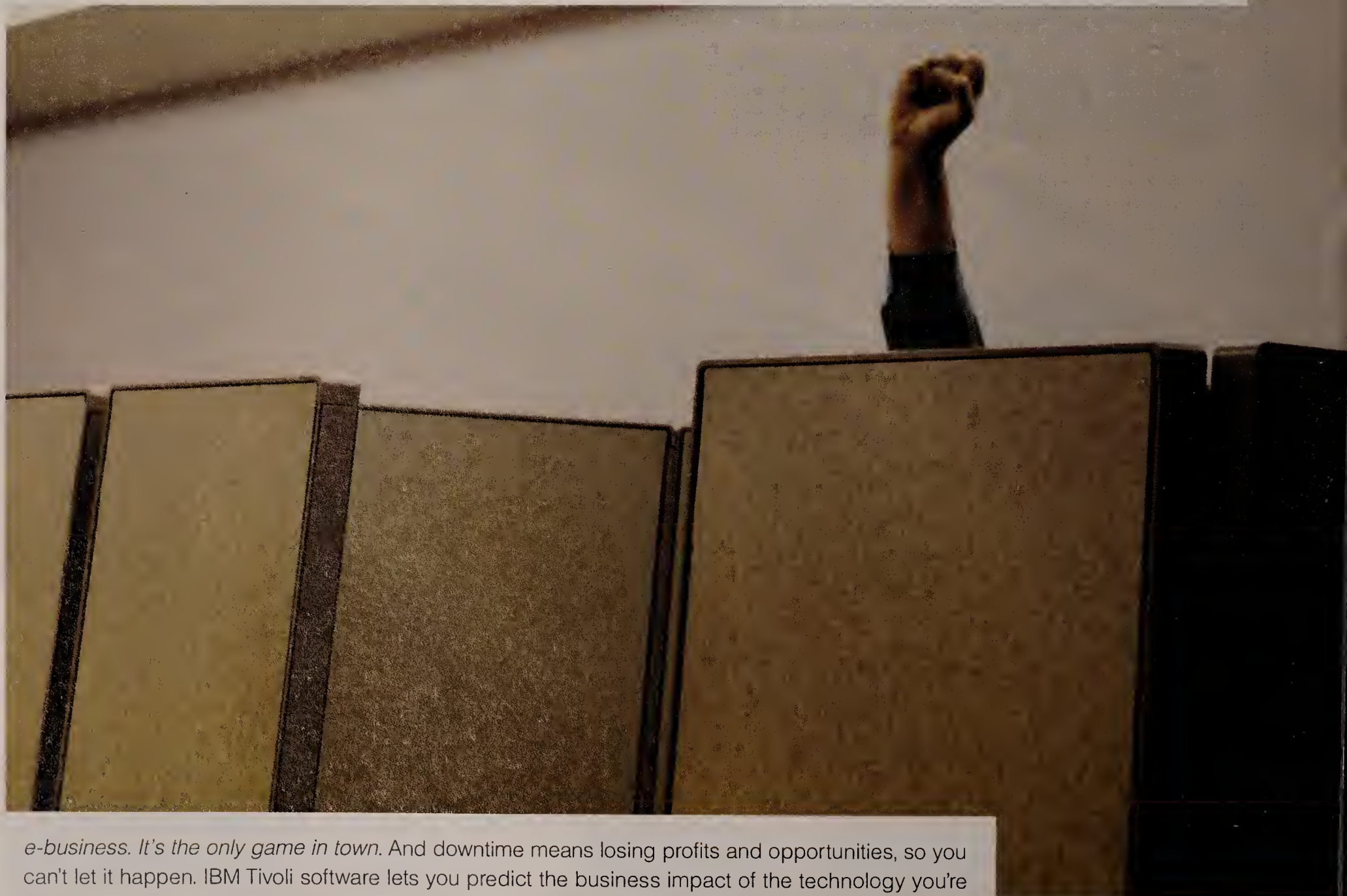
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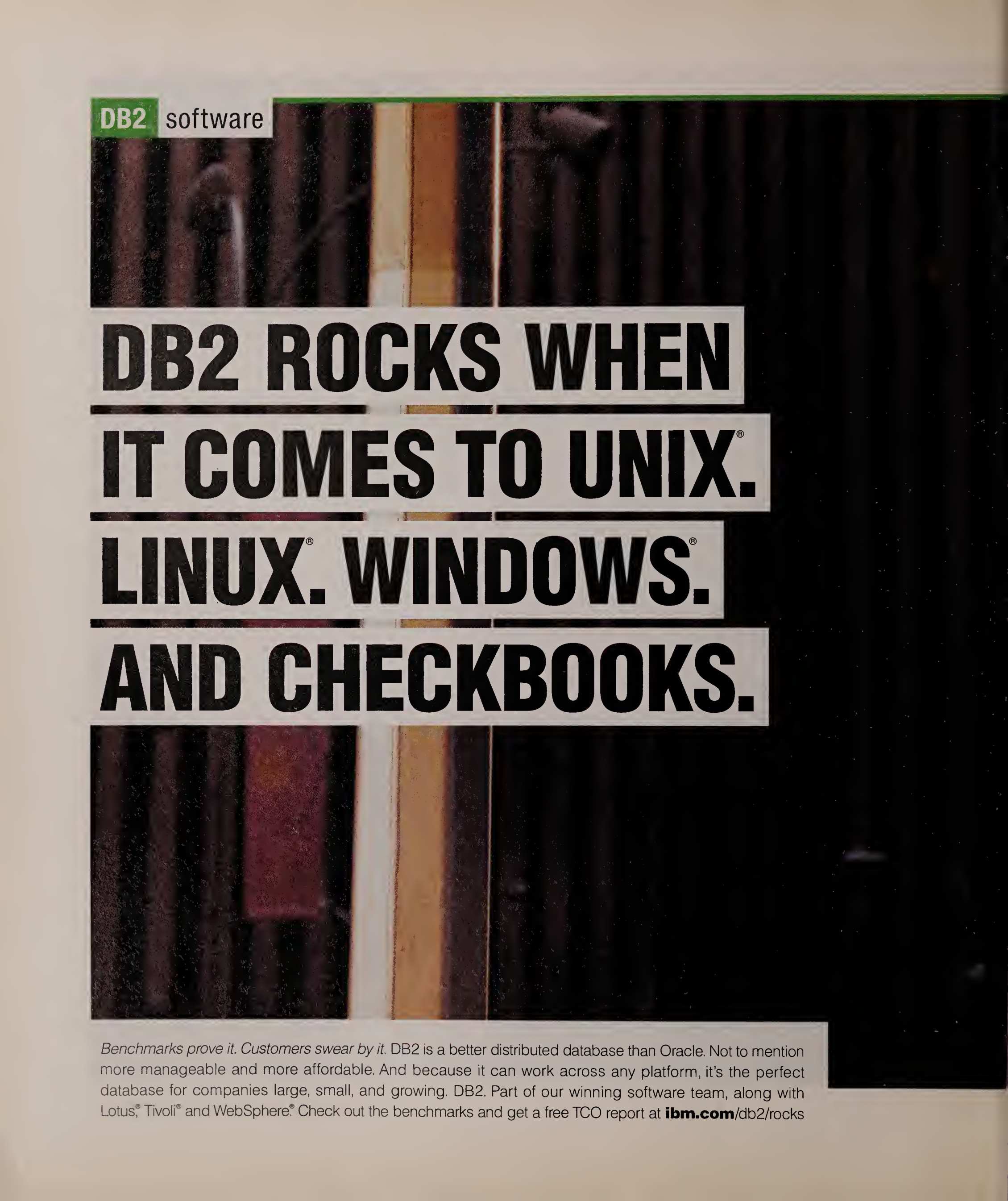
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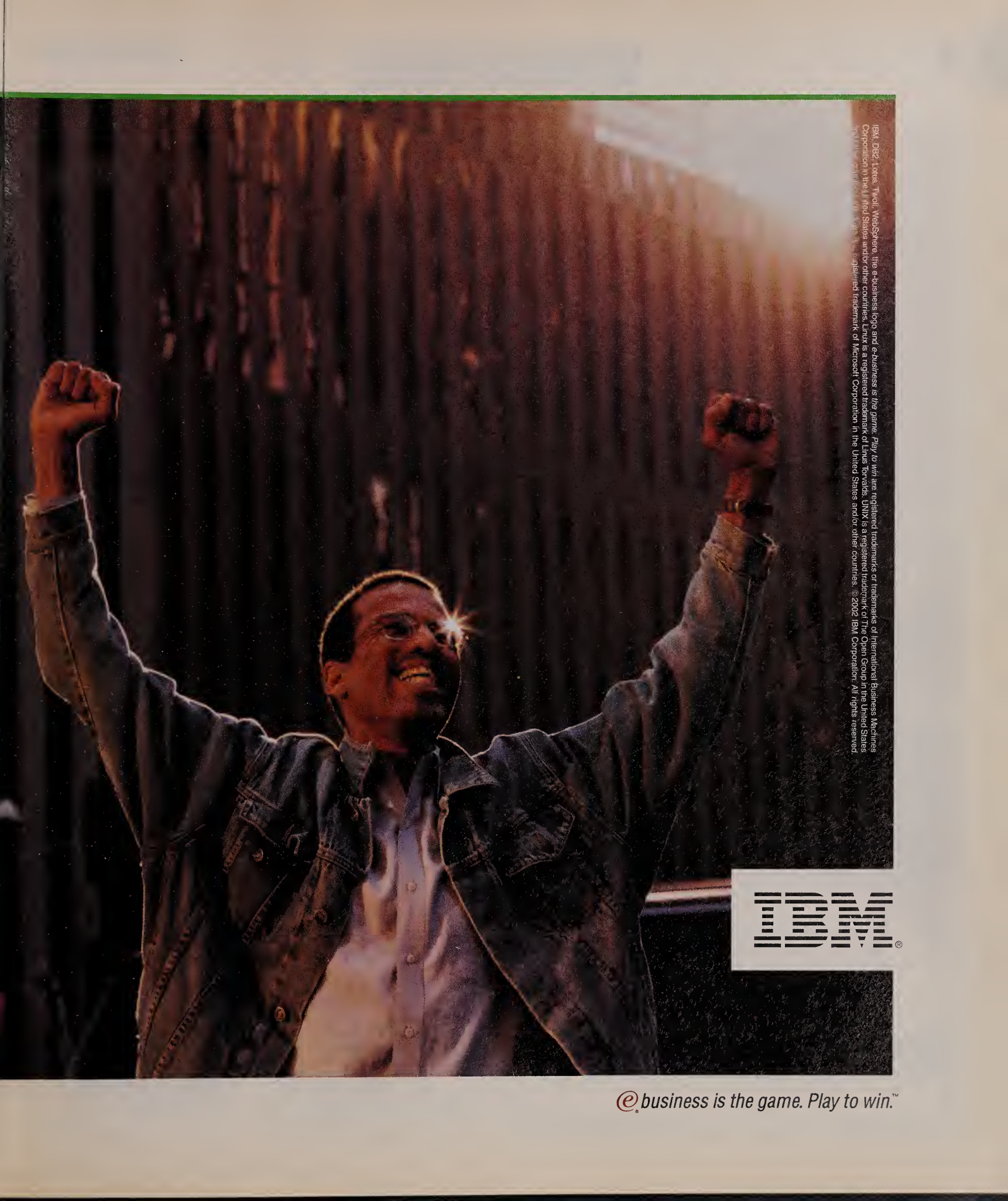


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A man in a denim jacket is shown from the chest up, celebrating with his arms raised in a crowd. The background is a blurred crowd of people, suggesting a large gathering or event. The lighting is warm, and the overall mood is one of triumph and excitement.

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WORKSTYLES

IT Is a Partner in Helping Scotts Grow

Brian Belcher, vice president of information systems at The Scotts Co., talks about how his department links to business at the consumer lawn-care products retailer.

What are the most critical systems supported or developed by your department on a daily basis? "A couple of years ago, we converted to SAP R/3, so we support all the core business applications in North America, which includes order entry, warehousing and distribution, financials, plant opera-

tions, forecasting, purchasing and management reporting. It's very integral to our business."

How would you describe the pace of the work? "It's hectic to steady, and always challenging. Now that it's spring we seem to be busy all the time. We try to do projects in the off-season, so we're not going through the learning curve when things are hectic."

How would you describe the overall

culture of IT at your company? "We're a fairly casual organization — there's some formality, but we're not bureaucratic by any stretch. We're very business-oriented — whereas the old environment was custom-programming, the new environment is package-oriented, so we don't have any hard-core programmers."

"For example, we have a guy in the distribution area who was a distribution warehouse manager. We're trying to hire people who connect to the business."

How much interaction does your IT department have with end users or other departments in your company? "In day-to-day maintenance, we interact



The Scotts Co.

Who they are: The world's leading supplier of products for do-it-yourself lawn and garden care.

Main location: Marysville, Ohio

Number of IT employees: 70

Interviewee: Brian Belcher, vice president of IS

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constantly with business users. And whenever we do strategic projects, the teams are not just made up of IS people; they're also made up of business people.

"So we're working shoulder-to-shoulder with someone from, let's say, human resources for payroll implementation. People from business and IS are almost always in the same room. It creates an accelerated development environment."

Does that get loud? "It can be. We give

them personal space, but they can interact easily with other people, from managers to analysts and business people and programmers."

What do you like best about how career advancement and training are handled at your company? "We have a new

initiative called performance management, where specific competencies are tied to specific jobs. We also budget 40 hours a year to associates in IS to achieve goals in their personal development plan.

"It's also not uncommon for IS people to move into the business. You're not pigeonholed into an IS career once you get here."

What makes your company's IT department unique? "We're recognized as a strategic partner in the organization. In order to go anywhere, you need IS to go with you. Another big perk is location — we're right outside of Columbus on a beautiful campus, with trees, ponds, beautiful grass, a swimming pool, volleyball, softball

and pavilions for cookouts."

What aspect of work do you look forward to each day? "We're always building something new, from the smallest of projects to strategic projects."

What aspect do you dread each day? "The biggest one is meetings you need to go to, so there's not a lot of 'think' time."

— Mary Brandel
brandels@attbi.com

Dear Career Adviser:

For the past 10 years, I've been a network manager at a large nonprofit organization, and I've been contemplating leaving for the past year or so. The organization has offered me a small promotion and a title change to "associate director of computer information systems." In the for-profit world, which title has more weight: network manager, associate director of CIS, network director or director of networking?

— LEAVING SOON

Dear Soon:

The networking professional infrastructure isn't driven by titles in the for-profit world, counsels Joe Sabrin, executive vice president and founder of eHire.com Inc., a New York-based technology recruiting firm. Instead, you'll need to stay current with the technologies that are key to your field, no matter what type of organization you're working for. These include Microsoft Corp.'s Active Directory, Microsoft XP deployment, Linux and Cisco Systems Inc.'s Architecture for Voice, Video and Integrated Data, as well as knowing how the Internet works as a business medium.

Therefore, attend online and night courses to ensure that you don't become obsolete in the event of a downsizing, which is where nonprofits have shown themselves to be quite vulnerable in similar economic climates in the past.

Making a move right now might be

difficult anyway, as most companies are waiting to hire new staff until corporate profits align with spending.

Right now, says Sabrin, half the number of people are doing twice the work, which, one would reason, can't continue indefinitely.

Hiring will start again during the summer of 2003, Sabrin forecasts, because many of the improvements to IT infrastructure for Y2k will become obsolete next year with the three-year amortization of equipment and the end of three-year leases.

Dear Career Adviser:

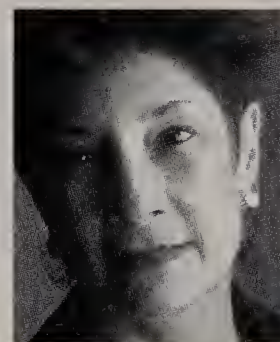
Like many others, my company is in a tight financial situation and has delayed our yearly salary reviews for about six months. It's offering stock options to employees as an alternate form of compensation. The options are redeemable only for 12 months after they are offered, and then at only 25% per year for four years. Is this what companies are doing now

and is it a "good deal," or is it just a way to keep key people from leaving?

— LONG SHOT IN L.A.

Dear Long Shot:

Companies typically use a four-year stock option plan to attract employees and often grant employees additional options as incentives, says Richard C. Leto, chief financial officer at BeachHead Group in Millbrae, Calif. Generally, these options follow the schedule you have described: 25% vesting upon your first anniversary of employment, which is also known as the "one-year cliff," with the remainder typically vesting over the next three years, either monthly or annually. Senior executives might receive fully vested options upon hire to replace stock they are leaving behind.



FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser.

When you become vested in stock options, they become yours to exercise or sell if you so choose. But you can also elect to keep them if you feel your company's worth is increasing. Generally, options terminate, or expire, when your full-time work status changes. In today's environment, most companies grant additional options that also follow the original four-year vesting schedule to give employees another incentive to re-

main with the companies, says Oakland, Calif.-based compensation consultant Rick Van Zee. Therefore, your company's proposal is fairly typical.

The problem, however, is this: Given your company's current shaky situation, trading current cash compensation for additional options can make your long shot even longer. ▀

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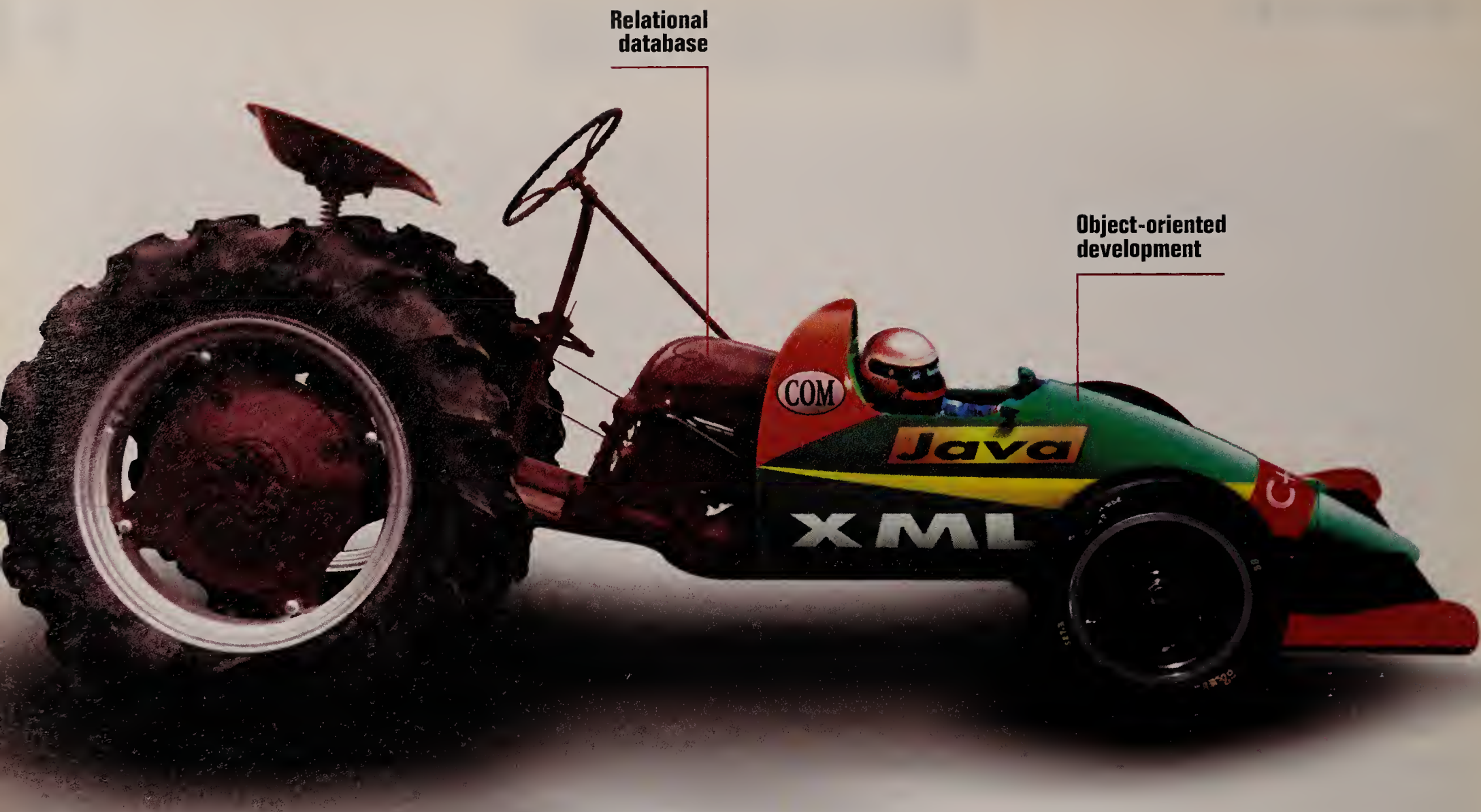
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TECHNOLOGY

THIS WEEK

UPS AND DOWNS

Computerworld takes a look at how its Emerging Companies to Watch in 2002 are doing six months after they were named to the list. Learn which ones are thriving and which are struggling to survive. **PAGE 42**

OPEN SOURCE IN THE ENTERPRISE MIX

Linux may get all the press, but a wide range of open-source tools and products are now an integral part of many corporate IT projects. **PAGE 46**

FUTURE WATCH

Scientists are hoping to build a virtual human being, organ by organ. Its body parts would be distributed in labs around the country or even the world, but it would work — and could be studied — as a single being.

PAGE 49

QUICKSTUDY

Steganography is the hiding of information within a more obvious kind of communication. Digital steganography involves the hiding of data inside a sound or image file. Learn more about the technology in this week's primer. **PAGE 52**

SECURITY JOURNAL

Security manager Mathias Thurman assembles his penetration-testing tools and puts a proposed PeopleSoft application to the test. **PAGE 54**

NICHOLAS PETRELEY

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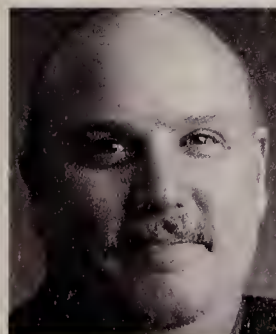
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NICHOLAS PETRELEY is a computer consultant and author in Hayward, Calif. He can be reached at nicholas@petreley.com.

EMERGING COMPANIES TO WATCH 2002

UPDATE

It's a dog-eat-dog world for technology start-ups. *Computerworld's* up-and-comers for 2002 have spent the past seven months either gobbling up new customers or getting eaten alive by rivals. Here's a look at how some of our picks have fared since being named to the list in November.

COUNTERPANE INTERNET SECURITY INC.

REASON FOR SUCCESS: Its early-warning security system staves off intruders and slashes staffing costs.

LOCATION: Cupertino, Calif.;
www.counterpane.com

BUSINESS: Provides managed security monitoring services.

CUSTOMERS & PARTNERS: Partnered with DynTek Corp. to provide managed security services to state and local governments. Teamed with Infinitum Security Pte. Ltd. to expand into Asian markets. Joined Cisco Systems Inc.'s AVVID Partner Program.



BY DEBORAH RADCLIFF

In the world of IT security, showing a return on investment can be an elusive proposition. But for The Regence Group Inc., a four-state Blue Cross/Blue Shield insurance administrator in Portland, Ore., the payback from one initiative was real and fast.

Since outsourcing its security event monitoring 18 months ago to Counterpane Internet Security Inc., The Regence Group has reduced staffing costs in its monitoring operations center by 80%. The center watches over the company's 200 perimeter devices, 600 internal Windows NT servers and some of its mainframes, says David McLeod, assistant director of IT security at Regence.

Outsourcing the security monitoring function has also completely eliminated intrusions thus far, he says. That's pretty impressive, considering that Regence had 145,000 security events

that required scrutiny in the last quarter of 2001 alone.

"The FBI reported in January that 1% of all attempted hacks are successful, so there should have been some breach of our systems. But there hasn't been," McLeod says.

In addition to being familiar enough with the Regence network to detect abnormal activity, Counterpane also provides an early-warning system that has protected Regence from Nimda, Code Red and other destructive worms and viruses, McLeod says.

Counterpane does this by correlating events occurring at its client sites located in earlier time zones and alerting McLeod's IT team hours before such malicious programs hit the West Coast. For East Coast clients, early-detection information is passed along in real time from client sites in the Pacific Rim and other clients on the East Coast.

Founded in 1999 by well-known cryptographer Bruce Schneier, Counterpane has been a company on the rise, consistently scoring high marks from analysts for its services and channel marketing strategies. Counterpane is now reselling through vendors such as VeriSign Inc. in Mountain View, Calif., and Check Point Software Technologies Ltd. in Redwood City, Calif. The company also earned praise for reducing its pricing model from a starting point of \$10,000 per month for small networks — too high for some customers — to \$5,000 per month.

But John Pescatore, an analyst at Gartner Inc. in Stamford, Conn., says he questions whether a single-service delivery model can sustain Counterpane's dominance in the managed security monitoring market. Gartner predicts that the managed security services market, of which monitoring is a subset, will reach \$5.27 billion by 2005.

"We think a mix of 70% managed security revenues and 30% consulting revenues is what's needed to succeed," Pescatore says. "We do give Counterpane marks for its incident response consulting, but those services are already wrapped into their fees. So they're shortchanging themselves by not putting these people into consulting delivery."

But according to a 2001 report from Giga Information Group Inc. in Cambridge, Mass., by staying focused on monitoring services alone, Counterpane remains the only vendor-neutral company in its category. And Counterpane's channel customers can provide the consulting services when needed, adds Schneier. ▀

COMERGENT TECHNOLOGIES INC.

REASON FOR SUCCESS: Its management software for ordering and sales channels eliminates data entry errors.

LOCATION: Redwood City, Calif.;
www.comergent.com

BUSINESS: Provides e-commerce capabilities for manufacturers to sell products through all channels and partners.

CUSTOMERS & PARTNERS: Seagate Technology LLC, Castle Rock Industries, Nissan North America Inc. and Choice Hotels International Inc. chose Comergent's Distributed E-Business System. Comergent signed a development and marketing agreement with Sun Microsystems Inc. to expand joint marketing programs.

LATEST ROLLOUTS: Added support for Simple Object Access Protocol and Web Services Description Language to its Comergent Network.



BY MICHAEL MEEHAN

With more than 15,000 items for sale, Symbol Technologies Inc. discovered that its customers didn't always know how to buy the right combination of products.

"Ordering errors would trickle into the factory and through our ERP [enterprise resource planning] systems," says Judy Murrah, vice president of sales development and systems at the Holtsville, N.Y.-based data terminal and bar-code scanner manufacturer. "We tried to fix it many times over the years, and nothing worked."

So Symbol hired KPMG Consulting Inc. in McLean, Va., to help find a solution. In May 2001, Comergent Technologies Inc. was tapped for the seven-figure project, says Murrah. Its software was linked to a homegrown, Web-based catalog, an SAP ERP system and a sales portal from Haht Commerce Inc. in Raleigh, N.C. Murrah oversaw the six-month installation, which went live in March.

"Comergent has their own connectors, so we just used what they supplied us," she says. "We really didn't have to build anything in the middle."

Symbol also didn't have to add IT staff, Murrah says. Nontechnical personnel maintain the rules that govern the software's use.

She says Symbol hasn't calculated

Continued on page 44

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www.computerworld.com/takesalsurvey

COMPUTERWORLD
SALARY
SURVEY
2002

Continued from page 42

when it expects to achieve a return on investment for the project, but initial results indicate that the order error problem has been solved.

Comergent's software is Java-based and uses XML for data representation, transformation and messaging. It works with Unix and Windows NT servers, as well as Java 2 Enterprise Edition and .Net applications.

Louis Columbus, an analyst at AMR Research Inc. in Boston, says Comergent has taken much of the pain out of e-commerce implementations. "It's probably the most enthusiastic customer base in the sell-side e-commerce market these days," he says.

But these are tough times for e-commerce vendors, who face shrinking deal sizes and wary customers, Columbus adds.

"[Comergent has] got the inside track to survivability because they do what they do so well," he says. ▀

EMPIRIX INC.

REASON FOR SUCCESS: Its Web monitoring tools diagnose performance problems, keeping e-commerce sites up and running.

LOCATION: Waltham, Mass.; www.empirix.com

BUSINESS: Provides test and monitoring tools and service for voice, Web and network applications.

MONEY MATTERS: Closed a Series C financing round of \$29 million.

CUSTOMERS & PARTNERS: China Netcom Corp. chose Empirix's network emulation product. Empirix created a marketing alliance with Ixia.com.

LATEST ROLLOUTS: Developed benchmark that ranks performance of interactive voice response transactions (Empirix Voice Performance Index); developed Web services testing tool (FirstAct 2.0).



BY MARC L. SONGINI

Links that are broken. Photographs that are mismatched with the product text below them. Those are the pitfalls of an unwatched Web site.

For the past two years, one large East Coast bank has steered clear of those hidden traps by using a testing suite from Empirix Inc. The tools ensure that the links on the bank's Web site are functioning properly and that its Web images are placed correctly.

"I have not looked at all the tools out there, but this is an easy-to-use tool [that] I'm comfortable with," says Steven Davis, vice president of quality assurance for the bank's e-commerce site. "It's easy to adapt it to most any Web site I've used."

Davis says the suite has allowed the bank to get its sites up and running quickly and reliably.

Empirix was spun off in September 2000 from Teradyne Inc., a Boston-based maker of testing equipment. It

boasts 3,000 customers running its Windows- and Unix-based products.

The company has a two-pronged product line, offering tools that test and monitor Web applications and voice applications for call centers.

Empirix's products are well suited to monitor complex Web-based transactions, giving the company a foothold in the financial services sector and the airline industry. American Airlines Inc. in Fort Worth, Texas, ranks among its high-profile customers.

Given that the testing market is fairly mature, Empirix has succeeded in carving out its own niche by combining voice recognition with Web testing technology, says Theresa Lanowitz, an analyst at Gartner Inc., a Stamford Conn.-based consultancy.

Empirix's testing suite ties into San Jose-based NetIQ Corp.'s infrastructure management software and is expected to have an interface to Hewlett-Packard Co.'s OpenView management suite later this year. ▀

THE UPS

Some Emerging Companies to Watch in 2002 that have been in the spotlight in the past seven months.

EnvoyWorldWide Inc.

Bedford, Mass.; www.envoyworldwide.com

BUSINESS: Offers customizable notification services to establish interactive voice and text communications.

CUSTOMERS & PARTNERS: Electric Insurance Co. chose EnvoyWorldWide's Envoy-Xpress to automate its departmentwide communications. Alliant Energy Corp.'s utility subsidiaries implemented EnvoyProfiles notification service for customer communication. CCBN Inc., an investor relations firm, unveiled its Target Messaging and List Management services, powered by EnvoyWorldWide. Has partnered with Altio Inc. and AnswerNet Network.

Kada Systems Inc.

Charlotte, N.C.; www.kadasystems.com

BUSINESS: Helps develop database applications on the desktop and deploy them to Palm OS devices or Pocket PCs.

CUSTOMERS & PARTNERS: Texas Instruments Inc. added enhanced Java capabilities to one of its chip sets using the Kada Mobile Platform. Kada also created alliances with Espial Group Inc., Softwired Inc. and Metrowerks Inc.

LATEST ROLLOUTS: Created frameworks for Java 2 Micro Edition applications (Kada Mobile Ready to Optimize Implementations). Designed a template for Java developers to design, develop and deploy Java 2 Micro Edition database

applications (Kada Reference Applications).

Kalido Ltd.

London; www.kalido.com

BUSINESS: Provides information integration software to support management of mergers, acquisitions, reorganization and globalization.

MONEY MATTERS: Announced 2001 revenue of \$8.6 million, following its organization as a separate company within Royal Dutch/Shell Group of Cos. in February 2001.

CUSTOMERS & PARTNERS: Cadbury Schweppes European Beverages picked Kalido's Dynamic Information Warehouse to facilitate the migration of Orangina to its own reporting and business intelligence standards.

PlaceWare Inc.

Mountain View, Calif.; www.placeware.com

BUSINESS: Provides Web conferencing services that enable businesses to conduct real-time interactive meetings and presentations over the Internet.

MONEY MATTERS: Raised more than \$30 million in funding.

CUSTOMERS & PARTNERS: New customers include Tyco Electronics Corp., CUNA Mutual Group, Deloitte Consulting, Bank One Corp., Webhire Inc. and Peregrine Systems Inc. PlaceWare created a technology and marketing alliance with Microsoft Corp.

Surebridge Inc.

Lexington, Mass.; www.surebridge.com

BUSINESS: Offers application outsourcing.

CUSTOMERS & PARTNERS: Customer base reached 500 with addition of Andrx Corp., Ap-

plied Graphics Technologies Inc., Bayard Advertising Agency Inc., Puma AG and Southeastern Library Network Inc. Named to PeopleSoft Inc.'s Accelerated Alliance Program of systems integrators.

Visual Insights Inc.

Naperville, Ill.; www.visualinsights.com

BUSINESS: Helps companies create e-business strategies with data visualization software to analyze and present e-business data.

CUSTOMERS & PARTNERS: Teamed with Intel Corp. to deliver Web analytics capabilities.

LATEST ROLLOUTS: Created Web analytics software with a browser-based interface that allows for the creation of performance indicator views tailored to individual users (eBizinsights XL 3.5).

Widcomm Inc.

San Diego; www.widcomm.com

BUSINESS: Provides wireless communication system software and turnkey designs for all wireless communication devices.

CUSTOMERS & PARTNERS: Licensed its Bluetooth communication software suite for Windows to Micro-Star International Co. Signed an agreement with Cypress Semiconductor Corp. to jointly develop next-generation Bluetooth solutions. Murata Manufacturing Co. signed agreement to incorporate Bluetooth for Windows communication software in its product line. Partnered with W-Link Systems Inc. to develop short-range wireless products.

MADE HEADLINES: It was named the first member of National Semiconductor Corp.'s Bluetooth stack partner program.

THE DOWNS

Emerging Companies to Watch that have faltered in the past seven months.

2Roam Inc.

WHAT HAPPENED? November 2001, board of directors voted to shut down the company and sell off its assets. March 2002, acquired by Atlanta-based Air2Web Inc.

Altra Energy Technologies Inc.

WHAT HAPPENED? October 2001, sold off software portion of its business to New York-based Caminus Corp. March 2002, exited electronic gas-trading business.

Telenisus Corp.

WHAT HAPPENED? December 2001, sold security management practice to VeriSign Inc. January 2002, sold assets and customer base of hosting business unit to Servervault Inc. in Dulles, Va. March 2002, sold security integration and consulting services assets to Forsythe Solutions Group Inc. in Skokie, Ill.

METHODOLOGY: Computerworld's editorial research team reviewed the 100 firms named to the Emerging Companies to Watch 2002 list, focusing on publicly available company and industry news, press releases and financial reports from November 2001 to April 2002. The following information was evaluated: growth (number of new or large clients, head count), financial performance, product news, partnerships with other IT suppliers, expansion and acquisitions. Information evaluated wasn't limited to that shown here.



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ENTERPRISES ADD Open Source TO THE MIX

A wide range of open-source tools have become key ingredients in corporate IT development projects.

By Mark Hall

LIKE GREAT CHARACTER ACTORS sharing screen time with a megastar, open-source tools seldom steal the limelight that shines on Linux. But those tools often get more applause from users who are putting them in key roles inside corporate IT operations.

Jeff Carter, CIO at Omaha Steaks International Inc., says he first became interested in open-source software last year when the company decided to bring its Web site in-house and link its online shopping cart application to the corporate database on an IBM AS/400. After a careful evaluation, the 1,800-employee, privately held gourmet foods company opted for MySQL, a popular open-source relational database from MySQL AB in Uppsala, Sweden, for its shopping cart.

The fact that the product was free was nice, says Carter. "But free that doesn't work is of no value to me," he says. What does make open-source technology valuable to Carter and others is the access to the source code and the broad-based online community of software developers continually debugging and adding features to a slew of tools that are used in a variety of IT projects.

"I'm a huge advocate of open source because the developments to the product are unlimited because so many people are working on it," Carter says.

Access Is Everything

Limits are what Jim Caley wanted to avoid. The senior systems engineer at Graco Children's Products Inc. in Elverson, Pa., recalls that the company needed to move a materials billing application from a client/server environment to an intranet. But the

company, a division of Freeport, Ill.-based Newell Rubbermaid Inc., ran into roadblocks because the commercial products it had in-house didn't do exactly what was necessary, and waiting for the vendors to customize them wasn't practical.

So Graco switched to a trio of open-source technologies for its application. The company has built a Web application server using Java, Linux and the Enhydra Web application server, formerly from Santa Cruz, Calif.-based Lutris Technologies Inc. (see box below), says Caley.

A PostgreSQL database runs on the server for Graco's bill-of-materials project. He calls the open-source approach "a safety net," but "not necessarily because I have access to the source code personally, but because the community does." Nonetheless, Caley has occasionally dipped down into the code. For example, he once had "to go into [PostgreSQL] code and fix a bug in a [Java database connectivity] driver to suit my purposes." Because the bug was peculiar to his environment, a fix for a commercial product may have taken forever, but now, "we can have what we want" in a timely fashion, he says.

Access to code is important, even if you're not doing the fixes yourself, argues Tig Kerkman, systems

DRAWBACKS

If there's a downside to corporations using open-source technology today, it's **the volatile nature of open-source vendors.**

Caley says that although the community support for open source mitigates the repercussions of open-source vendors going out of business, it still creates problems. For example, when Lutris Technologies dropped commercial support of Enhydra, he says users were concerned about losing vendor sales and technical support contacts, which can be disruptive during project development.

But despite numerous open-source companies abandoning commercialized products or going out of business, the open-source movement seems to be gaining momentum.

— Mark Hall

administrator for the city of Kenosha, Wis. The city uses the open source-based Evolution e-mail and calendaring application on 200 desktops. Being able to see Evolution's code, which is built on the Gnome open-source graphical user interface (GUI) and is sold by Boston-based Ximian Inc., has helped Kerkman locate problems and give direction to Ximian on where they may be found. "Because I was able to muddle through the code, I could see where the problem might lie," he says. As a result, Ximian was able to turn around a bug-free version to the city in less than two weeks, Kerkman says.

One of the more widely used open-source development tools is Tcl (pronounced "tickle"), a powerful scripting language that is included in most Linux distributions and supports other operating systems, including Macintosh and Windows. Tcl, originally from Scriptics Inc., is a popular alternative to other open-source scripting languages such as Python and Perl and, especially, to costlier commercial alternatives such as Microsoft Corp.'s Visual Basic.

"Tcl is my first tool of choice for most programming tasks," says Tom Poindexter, principal consultant at Talus Technologies Inc., a software consultancy in Denver. "I'll supplement Tcl with C or C++ as needed." He says Tcl excels in the corporate world for projects that involve GUI programming, XML development, network coding and test automation. Poindexter has also used Tcl for applications that need access to results from SQL queries and to verify customer addresses against a postal database.

Another advantage of Tcl, Poindexter says, is that "code of any given application tends to be 10% to 50% the size of an equivalent program written in C, C++ or Java. Writing less code means making fewer errors, getting the application done faster and [having] less code to maintain."

Big Risk?

The track record for vendors building a business with open-source products has been spotty at best. Many vendors have failed or quit the open-source side of the business. Financial success isn't the issue, users say.

Poindexter acknowledges that now-defunct Scriptics was a significant contributor to Tcl's development. "So, what happens to that tool you're using when that vendor closes shop?" he says. "In the Scriptics case, Tcl was already free, so nothing was lost." If it had been a commercial product, the tool may have disappeared with the company, Poindexter adds.

Caley says this could have happened with PostgreSQL, which had been marketed commercially by Great Bridge LLC. Even though Great Bridge closed last year, he says, "That didn't affect us at all." In fact, Caley says, Graco has expanded its open-source application development with a critical product data management (PDM) system that uses the popular PostgreSQL and Enhydra programs.

Familiarity isn't the only thing prompting more companies to deploy more applications built with

open-source technology. Cost is almost always a big part of such decisions.

Commercial vendor pricing boosts open-source advocates. "It's the best opportunity to compete against Microsoft since the 1980s," says Tom Adelstein, chief technology officer at Bynari Inc. in Dallas, which offers open-source messaging software.

In fact, Kerkman says, if he had to use Microsoft products, it would have cost him \$470 per desktop for equivalent features vs. \$59 for Evolution. "We're saving the city tons of money," he brags.

Carter, who doesn't hesitate to pay for software that meets his company's needs, acknowledges that the "enormous prices" being charged by database vendors "make open source much more attractive."

Had Graco invested in a commercial PDM system, Caley says, it would have cost \$100,000 to \$500,000, depending on the vendor and the features included. Add to this training, product customization and ongoing maintenance fees, and the cost can quickly get to seven figures.

But by taking the open-source route, Caley eliminated those upfront licensing costs. Customizing the software required six months of Caley's time, "and the application does exactly what we want it to do," he says. ▀

MORE ABOUT OPEN SOURCE

Vendors may fail, but open-source programs live on.

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RICHARD LILLASH





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COMMUNICATION WITHOUT BOUNDARIES

Virtually Human

Scientists want to create distributed software that re-creates the functions of the human body.

By Jennifer DiSabatino



FUTURE WATCH

study how functions in one part of the body impact others. Ultimately, the models could predict what a chemical, virus, bacterium or physical trauma would do at the cellular, organ, system and organism levels. Doctors in an emergency room could see the effects of physical trauma without opening up the body, and patients could have drugs customized to their body chemistry.

In a setup similar to that of the Human Genome Project, the Virtual Human Project would divvy up computational responsibilities. Specialists at each university or laboratory would develop software that represents a particular organ and then test what effect different stimuli have on that organ.

Software for some organs and functions would be completed far in advance of others. Development would be ongoing, and there wouldn't be a completed virtual human, but rather an ever-evolving model. That, combined with the complexity of the programming, dictates that the virtual human must be developed and run on a distributed basis, DeLisi says.

Boston University has already created a virtual cochlea, the bones inside the ear that vibrate in response to sound waves and translate them into electrical impulses for the brain. And, DeLisi says, scientists and programmers will make major progress in the next year on mapping how our sense of smell works and re-creating that in software. Vision is expected to follow over the next 10 years or so.

Physical Limitations

The virtual human would link the organ models over the Internet as they are created and eventually produce a holistic picture of the human organism. "It's been done in astronomy. It's been done in molecular biology. It's not been done in physiology," DeLisi says.

Researchers say biological information about humans has become too specialized, voluminous and dispersed to manage effectively without analytical and interactive help from computers.

"The human has got a wonderfully adaptable brain, but the input is slow, and we get distracted," says Clay Easterly, a researcher at Oak Ridge National Laboratory in Oak Ridge, Tenn., who is also promoting the virtual human. "I

don't see any way for a human being, or a group of human beings, to synthesize this vast data."

While the project has drawn some interest from the government, academia and industry, no one seems inclined so far to fund major parts of it. For the time being, the virtual human is likely to grow from relatively small efforts, such as the virtual cochlea project.

Money won't solve all the problems anyway. Computer models are still relatively crude, and they're narrowly defined to a particular reaction — in a cell or in an organ, for example.

The many-to-many structure of the Internet and the use of XML would be the framework for sharing information that now exists in isolation, DeLisi says. But creating programs that accept input from other applications is a challenge.

The virtual human would require integrating processes and software across vastly different scales, from molecules to whole organisms. "I don't think we have the foggiest notion of how to go about it," Easterly says. Programming would have to be done at each level — the molecular, cellular, organ and systemic — simultaneously and progress up and down until the functions met. Biological research would influence, and be influenced by, the programming effort.

The entire process could take 100 years or more, especially since it must ultimately include the brain. "That, I think, is a ways off," DeLisi says. ▀

ONLINE RESOURCES

Oak Ridge National Laboratory Virtual Human Project:

☛ www.ornl.gov/virtualhuman/

More descriptions of the Virtual Human Project:

☛ www.csm.ornl.gov/SC99/VHwall.html

More on DeLisi, who started the Human Genome Project and is involved with the Virtual Human Project:

☛ <http://bme.bu.edu/faculty/delisi.html>

Information about Kenneth R. Lutchen, another professor involved in the Virtual Human Project:

☛ <http://bme.bu.edu/faculty/lutchen.html>

University of Tennessee Innovative Computing Lab:

☛ <http://icl.cs.utk.edu/>

University of Washington National Simulation Resource Facility for Circulatory Transport and Exchange:

☛ <http://nsr.bioeng.washington.edu/>

TECHNICAL IMPEDIMENTS

For a look at some obstacles to building the virtual human, visit our Web site:

☛ QuickLink: 29995
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Steganography: Hidden Data

DEFINITIONS

Steganography is the hiding of information within a more obvious kind of communication. Although not widely used, digital steganography involves the hiding of data inside a sound or image file. **Steganalysis** is the process of detecting steganography by looking at variances between bit patterns and unusually large file sizes.

BY DEBORAH RADCLIFF

AN ENGINEERING firm suspected that an insider was transmitting valuable intellectual property out of its network. When Seattle-based forensics consulting firm Electronic Evidence Discovery Inc. (EED) investigated the case in June 2000, it couldn't find the evidence on the local hard drive. After checking mail logs, however, investigators found the smoking gun: two e-mails with harmless-looking image attachments sent by an engineer. Turns out, the images were hiding two of the company's most precious engineering specifications.

The technique used to hide the specifications inside image files is a high-tech version of a process called steganography, which has been around since the beginning of recorded history, says Sayan Chakraborty, vice president of engineering at Sigaba Corp. in San Mateo, Calif.

During the Roman Empire, he explains, secret information was tattooed on a messenger's shaved head. When the hair grew back, the messenger was sent out with the secret message on his scalp and a decoy message in hand.

In the IT realm, steganography replaces unneeded bits in image and sound files with secret data. Instead of protecting data the way encryption does, steganography hides the very

existence of the data.

And it's undetectable under traditional traffic-pattern analysis.

There are few legitimate uses for steganography, say forensics professionals. And despite reports circulating about terrorists using steganography to communicate secretly, experts doubt that's the case.

"Most people study steganography either as an academic discipline or a curiosity, but I don't know if even terrorist groups would actually use it," says Chakraborty.

Last year, after reading a *USA Today* article about

steganography and terrorism, Neils Provos, a Ph.D. student in computer science at the University of Michigan in Ann Arbor, decided to do his dissertation on steganography.

Provos developed detection and cracking tools to analyze images for signs of steganography, such as overly large files and uneven bit mapping. He tested the tools and then used them to compare 2 million images on San Jose-based eBay Inc.'s Web site, which has been cited as a possible place for posting and retrieving hidden messages. Provos found no cases of steganography.

"Steganography becomes the focus of attention, dies down, and then the public is all over it again," says Provos. "But it will never be pervasive, because the amount of data you can actually hide in the images is fairly small. And if someone wanted to steal intellectual property, it'd be easier to copy the data on a disk and carry it out in your pocket."

Even if steganography is present, forensics experts prefer to start by investigating less complex areas. But in some cases, the only evidence might be hidden in image or sound files, so investigators need to be aware of steganography and the tools used to detect and crack it, say experts.

"It's true that steganography is very little used, but we need to be aware of it when doing almost any forensics analysis," advises Kenneth Shear, vice president of technology and law at EED. ▀

STILL CURIOUS?

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QuickLink: 30130
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Are there technologies or issues you'd like to learn about in QuickStudy? Send your ideas to quickstudy@computerworld.com

How It Works

Steganography strips less important information from digital content and injects hidden data in its place. This is done over the spectrum of the entire image. Here's one way it could be implemented:

The following sequence of 24 bits represents a single pixel in an image. Its 3 bytes of color information provide a total of 256 different values for each color (red, green and blue) and thus can represent a total of 16.7 million colors. This particular value displays as a dark green:

Byte 1 - Red Byte 2 - Green Byte 3 - Blue
0 1 0 1 0 1 1 0 0 1 1 1 1 0 1 1 0 0 0 1 1 1 1 0

Now, let's take 11 of these pixels that represent, say, part of a solid-color background. In the following sequence, the least significant (rightmost) bit of each 8-bit byte has been co-opted to hide a text message - the four characters *Aha!* - in ASCII binary:

0 0 1 0 1 0 0 1 0 1 0 0 0 1 0 0
0 0 1 1 1 1 0 1 0 0 0 1 0 1 0 1

Here are the bits behind those 11 pixels:

Pixel	Byte 1 - Red	Byte 2 - Green	Byte 3 - Blue
1	0 1 0 1 0 1 1 0	0 1 1 1 1 0 1 0	0 0 0 1 1 1 1 1
2	0 1 0 1 0 1 1 0	0 1 1 1 1 0 1 1	0 0 0 1 1 1 1 0
3	0 1 0 1 0 1 1 0	0 1 1 1 1 0 1 1	0 0 0 1 1 1 1 0
4	0 1 0 1 0 1 1 1	0 1 1 1 1 0 1 0	0 0 0 1 1 1 1 0
5	0 1 0 1 0 1 1 0	0 1 1 1 1 0 1 1	0 0 0 1 1 1 1 0
6	0 1 0 1 0 1 1 0	0 1 1 1 1 0 1 0	0 0 0 1 1 1 1 0
7	0 1 0 1 0 1 1 1	0 1 1 1 1 0 1 1	0 0 0 1 1 1 1 1
8	0 1 0 1 0 1 1 1	0 1 1 1 1 0 1 0	0 0 0 1 1 1 1 1
9	0 1 0 1 0 1 1 0	0 1 1 1 1 0 1 0	0 0 0 1 1 1 1 0
10	0 1 0 1 0 1 1 1	0 1 1 1 1 0 1 0	0 0 0 1 1 1 1 1
11	0 1 0 1 0 1 1 0	0 1 1 1 1 0 1 1	0 0 0 1 1 1 1 0

The hidden message occupies 32 of those 264 bits (about 12%) and contains four 8-bit bytes. In the diagram, each maroon or gold box represents a bit that had to be changed to include the hidden message. Notice that only 14 of 264 bits (less than 5%) had to be changed and only seven of the 11 pixels were altered.

The two figures below represent the 11 colored pixels we've been manipulating. The figure on the left is the original, unaltered version. The one on the right has been modified, as shown above. Can you see a difference? I can't either.



If instead of 11 pixels we had a 300KB JPEG file, we could accommodate a text message of 36KB, or about 6,000 words.

- Russell Kay



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Enterprise Application Goes Through Wringer

A security audit calms Mathias' fears about a new Web-enabled PeopleSoft implementation

BY MATHIAS THURMAN

DURING THE PAST few months, my firm has been in the process of implementing PeopleSoft for managing corporate payroll, benefits and other human resources functions. As part of the project, management asked the information security department to conduct a comprehensive audit and penetration test against the infrastructure.

That makes sense, since the data that some of the systems will contain is sensitive in nature. We're implementing the version of Pleasanton, Calif.-based PeopleSoft Inc.'s application that includes a Web-based front end that talks to several other systems. The problem with a Web-based front end, however, is that it gives anyone with a Web browser potential access to the application.

The systems are configured in a three-tiered architecture consisting of front-end Web servers, midtier application servers and back-end databases that house our critical data. This includes employee compensation information, health care data and personal information such as employee Social Security numbers, dates of birth and dependent information.

I've never before audited or conducted penetration testing of a PeopleSoft deployment. To me, however, the purpose of the application is irrelevant. The process, methodology and mindset are still the same. The main questions that needed to be answered included the following:

- Can someone on the public Internet gain unauthorized access to the PeopleSoft infrastructure?

- Can someone with legitimate access exceed their authorization and gain access to information he shouldn't be able to view?

- Can someone on our internal network without any level of authorization gain access to the infrastructure?

The problem with audits of an imple-

mentation like PeopleSoft is that you can't just audit and conduct penetration testing against the application itself. The application consists of network resources, servers, software, people and the interaction of all the pieces to deliver the application in an efficient and secure manner.

The order in which the audit and penetration test is conducted is important. Understanding the entire process, interaction and flow, in my opinion, is the primary and most important step.

You can't rely on the network guys to determine correct firewall port configurations. They're just going to do what the application architects ask of them. Nor can you tell the systems administrators how to lock down the systems properly without first knowing how the entire process works.

Operation Overview

We first met with the application folks and had them walk us through the entire system's operation. We covered everything from authentication to how the Web servers, application servers and database servers communicate with one another. We asked what ports were necessary between each of the resources for proper operation. And we asked about the trust relationships between the servers.

Once we understood this, it was that much easier to audit the access control lists on the firewalls and routers. Understanding what services needed to run on the system made it easier to audit the operating system configurations. Gathering all this information was no easy task, because there wasn't one person in each discipline who knew everything. This information-gathering was the most time-consuming part of the audit. It took over a week to get a full understanding of the environment and trust relationships.

Auditing the network devices and individual systems was fairly straightforward. A variety of open-source and

commercial vulnerability assessment tools proved useful in validating the integrity of the systems for open ports, vulnerable services and general operating system configuration errors. However, testing the actual application itself was another story.

Several applications are intertwined with custom-made scripts and application programming interfaces, which let the application perform seamlessly and interoperate with other third-party software, such as databases, middleware and Lightweight Directory Access Protocol files. The common security scanning tools that we used for assessing the systems and network devices weren't able to dive deep within an application to uncover programming and configuration errors in the application.

Favorable Results

For this, we turned to Santa Clara, Calif.-based Sanctum Inc.'s AppScan. This tool is quite different from your typical scanning tools in that instead of providing an IP address or a network segment, the starting point is a Web page. The tool has a variety of operating modes, ranging from fully automated to interactive. I chose to go with the interactive mode because it lets me mouse-click my way through the application as if I were a legitimate user. At any time, I can stop and let AppScan execute its automatic scan. Under the covers, AppScan appeared to enumerate every Web page and script it could find and then performed a multitude of exploits to try to take advantage of programming and configuration errors in the Web-based applications.

AppScan was quite thorough. It enumerated more than 2,000 Web pages and discovered several configuration errors that might have allowed a malicious user to alter Web pages.

The results of our audit were extremely favorable. Other than a few misconfigured Apache Web servers and some firewall ports unnecessarily left open, the PeopleSoft architecture seemed fairly secure.

Next comes my least favorite part of testing: writing up the final report. I'll probably spend the next few days compiling the results of the penetration testing and architecture review.

SECURITYDISPATCHES

The Open Scanning Option

Commercial programs such as AppScan aren't the only game in town. Here are two useful open-source (read: free) software tools for security projects:

The Open Web Application Security Project (OWASP) builds open-source application security tools, including the Web Scarab vulnerability scanner. The organization also just released a useful document titled "OWASP Guide to Building Secure Web Applications and Web Services," which should be helpful to those developing Web applications. You'll find both at www.owasp.org.

From Houston-based BindView Development Corp.'s Razor security Web site comes Vlad, a security scanner that checks for the common vulnerabilities defined in the SANS/FBI Top 20 security threats list from the SANS Institute in Bethesda, Md. Download the tool at <http://razor.bindview.com/tools/vlad/index.shtml>.

AppShields on Full

Version 4 of Sanctum's AppShield Web application firewall, released in April, has an intuitive user interface that makes it suitable for rapid enterprise deployments, according to a recent *Information Security Magazine* review. But users who need serious developer hooks may want to look elsewhere. For details, visit www.infosecuritymag.com/2002/may/bulletproof.shtml.

10 More Reasons to Worry

The SANS Institute recently added 10 items to its SANS/FBI list of top security vulnerabilities. Visit the SANS Web site at www.sans.org/top20.htm.

Security Site of the Week

Dozens of security sites are on the Web, but not all are useful or well organized. The Church of the Swimming Elephant has an odd name, but it's clearly designed and organized, advertising-free and up to date with the latest news. Check it out at www.cotse.com.

Have you had experience auditing a major enterprise application? If so, I welcome your suggestions in the Security Manager's Journal forum. ▀

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com, or join the discussion in our forum.

QuickLink: a1590

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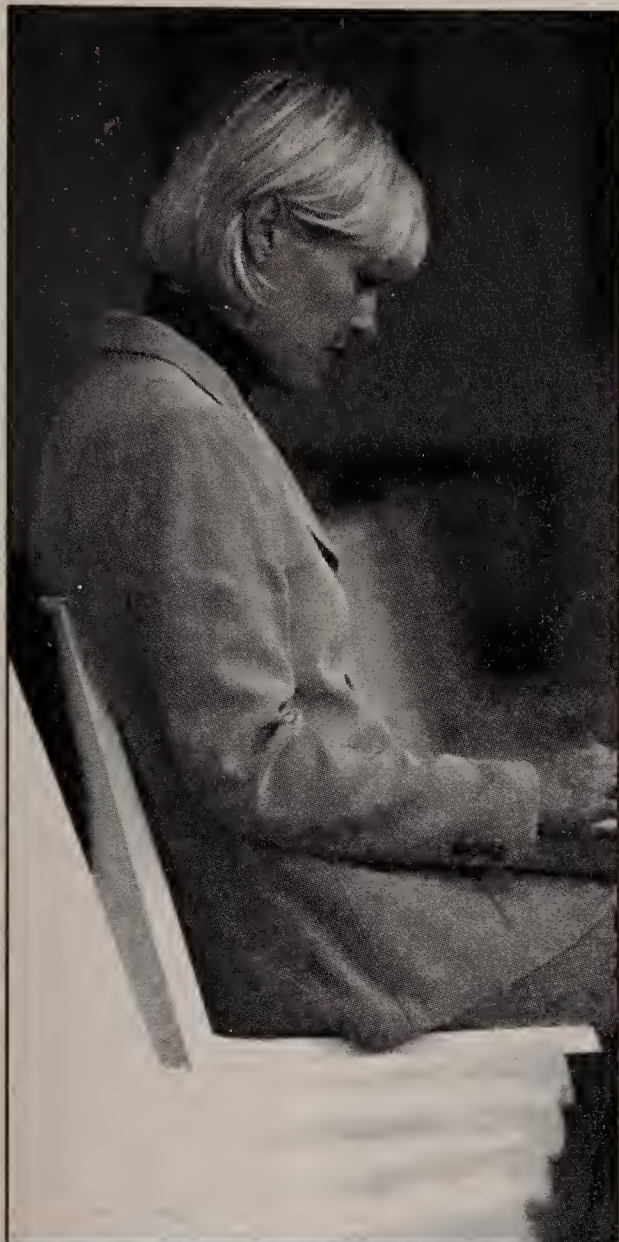
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Sr. Systems Analyst wanted by NJ based Co for job loc throughout the US. Must have Bachelor's degree in Comp. Sc. or Engg., 2 yrs. of s/ware exp. & proficiency with Linux, Telecom & network security protocols, Firewalls, VPN, SMS. Respond to: Atinav, Inc., 100 Franklin Sq. Dr., Ste. #304, Somerset, NJ 08873. (Ref. GG 8244). No phone calls.

Programmer wanted by Financial Software & Sys'ts Dvlpr in MA. Dvlpr & maintain testing procedures; doc on-line ref materials; provide in-house customer support; write functional specs for programming; dvlpr new sys'ts. BS in Comp Sci & 2yrs exp in job offered req. Respond to: Office Mngr/SunGard, 2 Adams Pl, 4th Fl, Quincy, MA 02169.

Programmer-Analyst/DBA to design, analyze, develop, code, test, optimize, implement, & provide user support for various applications using VBScript, JSP, Java and HTML. Design & create Oracle 8 tables, triggers, databaselinks, constraints, indexes, and PL/SQL stored procedures and packages. Work with Windows NT, Unix, Oracle Discoverer & MS Access 2000. Req'd: B.S.C.S. & 5 yrs Exp. M-F, 40 hrs/wk. Freq. reloc. within the US may be necessary. Resume to J. Brigham, HR #061002, 6992 Columbia Gateway Dr., Columbia, MD 21046.

Systems Analyst wanted by NJ based Co for job loc throughout the US. Must have Master's degree in Comp. Sc. or Engg., 2 yrs of s/ware exp. & proficiency with Bluetooth, UPnP, JDBC, JAVA & Visual Basic. Respond to: Atinav, Inc., 100 Franklin Sq. Dr., Ste # 304, Somerset, NJ 08873. (Ref. GG 8208). No phone calls.

Systems Analyst/Programmer wanted by Software Dvlpr't firm in Bklyn to dvlpr & upgrade s/ware applcs. Bach degree req'd. Respond to: A-Plus Systems, Inc., 6604 Bay Parkway, Brooklyn, NY 11204.

Systems Administrator wanted by Home Care agency in Elk Grove Village, IL. Req'd: Bachelors in Computer Science or Electronics or Communications Engineering. Send resumes to: HR, Carling Home Care Services, Inc., 1881 Commerce Drive, Unit 107, Elk Grove Village, IL 60007. No calls please.

PROGRAMMER/ANALYSTS wanted by hardware/software co. in Houston. Must have degree & exp. Respond by resume only to: Mr. S. Ryu, J/H #10, Computize, Inc., 1008 Wirt Rd., Ste #150, Houston, TX 77055.

Program's/Analysts: Analyze, plan, devlp & test sw applic'n's for cable communica'n industry; Evaluate user request to program & modify applica'n w/VC++, JDK1.2, Corba, AnsiC++ on PowerTV/NT Platform. 40h/w, 8-5, BS or foreign equiv't & 1-yr wk exp in any position involv'g JDK1.2 & PowerTV. Resume to J. Bhasin, Itaas, Inc. 4530 S. Berkeley Lk Rd. #A, Norcross, GA 30071/email: jaspal.bhasin@itaas.com

Software Engineer wanted w/BS & 2 yrs. exp. in San Jose, CA. Send resume to: HR Dept., Scicom Americas, Inc., 1500 S. Dairy Ashford, Ste 241, Houston, TX 77077

Several computer related positions available for large transportation and logistics services company. Degree, technical skills & experience vary per positions. Send resume to: vivianirizarry@ups.com or United Parcel Service, P.O. Box 833, Mahwah, NJ 07430, Attn: Vivian Irizarry, A-563, Ref. #1. Employer will not sponsor visas for position.

A high-tech company is seeking the following Software Engineers who will collaborate in the research, design & development of next-generation storage network systems. Req'd: Software Engineer #1: Master's in CompSci. Min 1yr exp as Software Engineer/Researcher. Must have research and/or project exp w/Active Networks & network programming. REF#20065-1 Software Engineer #2: Master's in CompSci. Min 1yr exp as Software Engineer/Researcher. Must have research and/or project exp w/design & development of IP protocol stacks. REF#20065-2 Software Engineer #3: Master's in CompSci. Min 1 yr exp as Software Engineer/Researcher. Must have research and/or project exp w/network security & access control in IS. REF#20065-3 Send res. to: Anne Budowsky, Nextorage, Inc., 520 8th Ave., 21st Fl., NY, NY 10018. PLS INDICATE REF#.

SOFTWARE CONSULTANT
Analyze & evaluate existing or proposed software systems. Dsgn, dvlpr, implmnt and improve programs, systems and related procedures to process data using in-depth knowledge of the software dvlpmnt life cycle. Encode, test, debug and install operating programs and other system software utilizing knowledge of RDBMS environments and PowerBuilder. B.S. degree or equiv. in Comp. Sci., Comp. Sys., Math, Engng, Bus. or Commerce + 2 yrs of exp. in position offered or as a Prog. Analyst, Sys. Analyst or Soft. Engrng req'd. Exp. must incl: a) Oracle, Sybase or SQL Server; and b) PowerBuilder. High mobility preferred. 40 hrs/wk, 8 am - 5 pm, OT as req'd, \$61,000/yr. Qualified applicants please submit resume to Manager, Washington County Team PA CareerLink, Millcraft Center, Suite 150LL, 90 West Chestnut Street, Washington, PA 15301-4517. Refer to Job Order No. WEB249035.

Business & Information Systems Administrator. Administer and manage company information structure. Perform all IS related functions. Support, maintain, and enhance current JD Edwards ERP system to achieve business strategies and objectives. Create, maintain, and distribute business reports from ERP system. Design and maintain company custom software. Oversee and perform all IT related functions. Position is located in York, Nebraska. B.S. degree req'd (or equiv. education or experience) w/ major in Comp. Sci. or related field. 5 yrs of experience req'd. Must have proof of legal authority to work in the United States. Send resume to Joe Kardos, 15159 Andrew Jackson Hwy 76 West, Fair Bluff, NC, 28439. This advertisement is paid for by the employer.

Authorware Dev/Senior: Work w/pioneer in field of applying computer technology to work-force training in North Jersey, standard benefits + tuition reimb., no pd. relocation. Code Macromedia Authorware (v 3.5+) proj., convert & add changes for existing proj. to highest version of s/ware. Prgm. extensions to incl. missing functions, use MS Visual C/C++ Developer Studio on Windows interface to prgm. critical functionality unavailable in Authorware, compile/draft/maint. s/ware doc. Must demonstrate working knowledge w/Authorware dev. environ. & pgmng. Principals only reply to Dept. DP, ISI Inc., 411 Hackensack Ave., Cont. Plz II, Hackensack, NJ 07601

Advantecs has openings for application developers for mainframe and Database administrators for Oracle/DB2 for its various locations in US. Must have at least 5 years experience in the following areas:

Mainframe Application Developers: Exp in online/batch programming using COBOL, JCL, CICS, DB2 & VSAM. Must have problem solving exp in using mainframe debugging tools. Exp in programming client server applications with mainframe as server a big plus.

Oracle / DB2 DBAs: Exp in setting up and supporting production in Oracle/DB2 environment.

All the positions require good analysis, problem solving and communication skills. Some positions also require Bachelor's degree. Others require Master's degree, equivalent degree and experience s also accepted. Excellent pay and benefits. Please indicate the position applied for. Mail resume to HR Dept, Advantecs Group Inc, 1430 Oak Tree Road, Suite F, Iselin, NJ 08830.

Computer Professionals (Multiple Positions) w/exp in: Cobol, DB2, CICS, IMS, MVS, JCL, ERWin, Delphi, NFS, NIS, DHCP, HACMP, Raid Arrays, Pro*C, C, C++, VC++, HTML, Perl, Veritas Volume Manager, Bourne, K Shell, Java, Java Script, ASP, Corba, EJB, JSP, Swing, AWT, Weblogic, WebSphere, Servlets, CQM/DCQM, IIS, EDI, .Net, Active X, AIX, WinRunner, Peoplesoft, Peoplecode, Veritas, Sun Cluster, NetBackup, HP Open View backup, Linux, Unix, HP-UX, AIX, DOS, Windows NT, VAX/VMS, VB, PB, Sybase, PL/SQL, T-SQL, ODBC, JDBC, MS SQL Server, SQL*Plus, SQL*Loader, Oracle, Datawarehouse, Forms, Reports, Oracle DBA, Oracle RDBMS, Dynix/Ptx, Oracle Apps (GL, AP, AR, OE, BOM, PO, HR, INV) Oracle Financial Applic., Oracle Designer, MS Access, Excel, Cisco Router, Windows NT, DOS, Sun Solaris Cluster, Sequent Server, Aries Servers, Sun Solaris system & Network Admn., SUN, SUP Servers, ACL, TCB, Developer 2000, Designer 2000, Rational Rose, Numega bounds Checker, True Coverage, True time, OOAD, MFC library, SEI-CMM, ERWin and related tools. Apply to: STG, Inc., 3340 Peachtree Road, Suite #1800, Atlanta, GA 30326. E-mail: itresumes@stgil.com

Applications Developer (Norcross GA)- Research/design/analyze/develop software, write instructions using C/VB/JavaScript/WinRunner/PL/SQL/Apache/HTML/MS Visual Studio/source control tools/Object-oriented program. & tech. & MS SQL. Bachelor's degree or foreign equiv. in CS, MIS, CIS, Engineering, or related req'd. Must be proficient in C/VB/JavaScript/WinRunner/PL/SQL/Apache/HTML/MS Visual Studio/source control tools/Object-oriented program. & tech. /MS SQL. \$57,750/yr, 40+ hrs/wk, OT as need. Send resume to: M. Powers, HR Adm., REF#SN, CoreCARD, 1 Meca Way, Norcross, GA 30093.

ERG is looking for Dir of Development/Info Systems to estab & run technical teams for MS Great Plains (MSGP) Value Added applic. Must know basic acctg principles & tech. needs of acctg firms. Customize solutions using MSGP Dexterity. Assist project mgrs in systm dsgn, incl General Ledger, Receivables & Payables. Recruit staff & run wkly meetings. Manage tech. & prof dev. BS in Comp Info Sys or related field. Min 5yr exp. Certified MSGP Dexterity Engineer or proven exp w/Dexterity. Salary based on exp. Resume to ERG, 3430 American River Dr. Ste 200, Sacramento, CA 95864 or email ckaeser@enterpriseresource.com Attn: Janet Kaeser.

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Applicant sought for position in Huntersville, North Carolina as Senior Project Manager in Digital Technology and consulting services to perform the role of a technology architect for a B2B, B2C, and technology solutions that uses the Sun Java as the core development program. This includes designing the N-Tier architecture and the solution components for the client.

Includes the ability to understand business processes and client requirements from a functional view and to translate them into a technology framework. Includes the ability to understand improvements in technology in this fast-paced world and to incorporate the changes to enhance the existing solution to maintain the competitive advantage. Manage projects according to client needs. Leads a team in implementing WEB development business.

Education: BS in Engineering or Computer Science plus 5 years experience in related fields. Excellent verbal, written, presentation, training technical, and customer relationship skills are required. Strong interpersonal and communication skills are essential.

Forward resume to: Genevieve Dorneles Human Resources Intiqua International Inc. 45 Broadway, 19th Floor New York, NY 10006

Senior Programmer Analyst. Student information database programming, analysis of user needs based on Datatel Colleague information system. Analyze, develop web pages using Cold Fusion and other programming tools. Develop needed databases. Required knowledge and experience: Unidata query statements to select data from Datatel Colleague Release 17 SIS Database. Download info resulting from queries. Work with diverse clientele to design, implement web interfaces for delivery and/or collection of information. Develop Cold Fusion apps using SQL to access and maintain data. Write Java and Java Script to support Cold Fusion apps with client side logic. Develop and maintain MS Access databases, MS Visual Basic and SAS programming. Base Salary \$32,802 per 12 months plus fringe benefits. Send two copies of letter of application and resume to: South Dakota One-Stop Career Center, Attn: Laura Hoyt, 1310 Main Ave S, Suite 103, Brookings, SD 57006. Telephone: (605) 688-4350. Fax: (605) 688-6761 Must refer to Job Order Number SD1199271.

Richmond, Virginia law firm has an opening for a Senior Web Developer.

The successful candidate will build software applications to provide the technical architecture of Web sites or Web-based software products. Responsibilities include gathering feedback from design and technical staff on development needs; building user interface applications and back-end databases; authoring complex Web pages; assisting in project planning and Web site design; creating prototypes and functional specifications for software projects; and creating technical methodologies for engineering solutions to Web development problems. Additionally, the Senior Web Developer will meet regularly with other information technology personnel on specifics of projects and deadlines; and will offer guidance on new Web technologies to utilize, such as browsers, languages, and plug-ins.

Requirements for this position include a Bachelors Degree in Information Systems, Computer Science or Mechanical Engineering (or foreign equivalent) and 5 years of progressively responsible experience using VBScript, JScript, HTML, ASP, JAVA, SOL and other programming and scripting languages; the ability to conceptualize and plan long-term needs of Web Development and to manage related projects. The ideal candidate will have excellent oral and written communication skills; leadership and project management experience, and the knowledge level to make suggestions regarding Web-based technical standards for specific Web sites and the Firm as a whole.

Interested candidates should submit a resume to: McGuire Woods LLP, HR Recruiting Manager, One James Center, 901 E. Cary Street, Richmond, VA 23219. EOE

Venturi seeks D/B App. Dev. for Sea/Bell area projects. DESC: Arch., dsgrn, & dev. bus. intell. sys. & rel. apps & interfaces util. RDBMS, SOL, VB, extract, transform & load tools, reporting tools, Unix & Win o/s. Dev. data models & d/b schemas. Mng. data migration & sys. integration. Travel to client sites. REO: BS in Engr., CS, Math, or Phys. + 3 yrs. full life cycle dsgrn, dev., & impl. of c/s sys. apps, interfaces, & RDBMS util. SOL, HLL, & Win o/s. 1 yr. performing data migration & sys. integration. Prem. sal., benes. & bns. Pls. rep: J. King, Job#CCL-89, 11255 Kirkland Way, Kirkland, WA 98033.

OH Consulting, Tech. Services Firm seeks Programmer Analyst to code, test, debug simple and complex maintenance programs and subroutines; design, develop large size complexity program modules; design system requirements, analyze business procedures and issues, convert them to programmable form and design; verify, test and support such requirements, procedures, issues and programs; design, develop web-based reports to summarize and analyze Performance Management metrics gathered from GSM wireless networks; maintain user database for the Web-base applications. Bachelor's Degree in Computer Science & min. 1 yr. exp. in job or job related. Must have exp. with Perl, Java, HTML, Shell Script, and UNIX. Exp. may be gained before, during or after degree. Resumes to Liberty Communication Services, Inc. 540 Officer Center Place, Ste. 200 Gahanna, OH 43230. No calls. EOE

CIGNIFY, a leading information technology company in time & attendance systems currently seeks applicants for the following position in its Atlanta, GA offices: Engineering Manager. Applicants for this position must have a bachelor's in computer science, engineering, or related field plus five years of experience in developing client/server and/or Web-based technologies and three years of experience in database design, implementation (PL/SQL or T-SOL) and tuning. Applicants should also have one year of experience in VB6.0, XML, and BizTalk/SOAP and two years of project management experience directing lower-level engineers. For consideration, please forward your resume and letter of interest by mail to: CIGNIFY Corporation, Vice President, Engineering, 7000 Central Parkway, Atlanta, GA 30328. Please do not email resumes. EOE

Bioinformatics Scientist to provide technical assist on enterprise bioinformatics software to research scientists at client sites in the U.S. & overseas. Determine & analyze user requirements & code customized solutions & automate the analysis function of software for biologists & bioinformaticians, using base scripts, Perl & Java. Assist in the design & development of software to meet the needs of the bioscience research community. Req'd. Ph.D. in biology or molecular biology & 2 yrs. exp in bio-science research using bio-technology. M-F, 40 hrs/wk. Send resume to: I. Sytnikov, HR, Ref #061002, InforMax, Inc., 7600 Wisconsin Avenue, 11th Floor, Bethesda, MD 20814.

SOFTWARE CONSULTANT

Analyze & evaluate existing or proposed software systems. Dsgn, dvlp, implmnt and improve programs, systems and related procedures to process data using in-depth knowledge of the software dvlpmnt life cycle. Encode, test, debug and install operating programs and other system software utilizing IBM operating systems, CICS/COBOL languages and DB2. BS degree or equiv. In Comp. Sci., Math, Bus., Engrng or Commerce + 2 yrs of exp. in position offered or as a Prog. Analyst, Soft. Engr or Sys. Analyst req'd. Exp. must include: a) Operating System: IBM; and b) Languages: CICS and COBOL; c) Database: DB2. High mobility preferred. 40 hrs/wk, 8 am - 5 pm, OT as req'd, \$61,000/yr. Qualified applicants please submit resume to JS Supervisor, Greene County Team PA CareerLink, 4 West High Street, Waynesburg, PA 15370-1324. Refer to Job Order No. WEB249039.

SYSTEMS PROJECT DIRECTOR, BAAN

Responsible for Baan ERP (enterprise wide) software projects. Plan, design, & direct Baan projects, customizing/implementing, linking to web-based custom order processing, inventory management, distribution services, virtual & actual warehousing. Oversee customizing Baan Finance, Admin & Distribution modules. Provide project management (develop budget, time schedule, evaluate consultants & contractors. Requires MS in CS or MIS & 3 yrs exp Baan systems proj. dvlpmt; or BS CS or MIS & 5 yrs exp large database design, dvlpmt, & implementation including 3 yrs Baan systems project dvlpmt; exp to include 2 yrs project mngmt or leader for enterprise-wide Baan implementation. Also requires demonstrated ability to use Baan Finance, Admin, & Distribution modules, to implement Baan on Windows NT & MS SQL Server, & to link Baan w/ standard EDI translators; knowledge of Baan Advanced Tools. 40 hrs/wk, 87-110K/yr. Send 2 resumes to: Case #20018393, Labor Exchange Office, 19 Staniford Street, 1st Floor, Boston, MA 02114

COMPUTER/IT

Project Eng'r, Networks. Framingham, MA. Install & maintain routers & switches. Configure routing protocols such as TCP/IP, IPX, AppleTalk, SNA, SDLC, HDLC, OSPF, RIP, RIPv2, EIGRP & BGP. Implement LAN's & WAN's. Implement security in ntwrks. using Firewalls & VPN ntwrk. devices & complete req'd documentation such as ntwrk. diagrams, Layer 2 & Layer 3 ntwrk documentation & installation rpt documentation. Provide tech. support & troubleshoot. REQUIREMENTS: M.S. in Comp. Sci., Elect Eng'r, or related field with graduate coursework in Comp. Ntwrks. 40 hrs/wk plus overtime as needed. Mail resumes w/ ad (no calls): D. Schofield, DiData, 135 Newbury St., Framingham, MA 01701.

Axiom Systems, Inc., an enterprise technology company currently seeks applicants for the following positions in its Alpharetta, GA location: Senior Programmer Analyst - analyze requirements, design, develop and test product lifecycle management and workflow customizations of web-based applications; PDM Integration Analyst - design, develop and test seamless integration of PDM and CAD systems; PDM Programmer Analyst - analyze requirements, design, develop and test Internet-based software systems and applications. Applicants for these positions must have a bachelor's or master's degree in Computer Science, Engineering or related field plus 2-5 years of relevant experience. For consideration, please forward your resume along with letter specifying position applying for, to: Axiom Systems, Inc., Attention, Chuck Stickels, 2550 Northwinds Parkway, Suite 440, Alpharetta, GA 30004. EOE

Sr. Software Design Engr. wanted by a software/hardware dvlp. Co. in San Jose, CA. Mail resume to HR, SANlight, Inc. at 50 W. San Fernando St., Ste 420, San Jose, CA 95113.

Noetix seeks Corp. Web Admin. for HO office in Bellevue, WA. DESC: Analyze, admin, & maint. perf. & content of corp. internet & intranet sites. Install & config. web servers, netwks, site & sys. security s/w. Dsgn & dev. web & multimedia apps. that access info. stored on var. RDBMS util. SOL, ASP, XML, VBScript, JScript, & Macromedia Flash on Win o/s. REO: BS in Engr, CS, Phys, or Math + 2 yrs. exp. admin. & maint. perf. & content of corp. internet & intranet sites; install & config. web servers, netwks, site & sys. security apps; dsgrn & dev web sites & web apps. to access info. on RDBMS util. SQL, ASP, VBScript, JScript, & Win. Plus 1 yr. exp. dsgrn. & dev. multimedia apps. util. Macromedia Flash. Prem. sal. + benes. Pls. reply to J. Hubbs, Job #NC-105, 2229-112th Ave NE, Ste. 200, Bellevue, WA 98004.

SALES MANAGER

Pelco, Closed-circuit TV Manufacturer, located in Clovis, CA is hiring:

Strategic Accounts Manager (Sales Manager)

Job requires travel throughout the U.S.

REQ: Bachelor's degree or equiv. in Bus. Admin., Marketing or related field (in lieu of Bachelor's, will accept 3 yrs exper in job, mktng, or rel.) +5 yrs exper in CCTV & video equip industry, incl. 3 yrs marketing exper w/ customer strategies. Resumes to: Pelco, HR, Attn: Kathy Tucker, 3500 Pelco Way, Clovis, CA 93612 or email to HR@pelco.com. Affirmative Action/EOE.

Software Developers, Gaithersburg, MD. Analyze, design, develop, integrate, test, implement & maintain business applications in internet architecture using Lotus Domino, DB2, DECS, XML, Java, Javascript, DHTML, AS400, and MOSeries. Train clients in the use & operation of new applications. B.S. in C.S., Math or related & 5 yrs rel. exp. including 3 yrs exp. with DB2 or RDBMS. Experience with Lotus Notes/Domino, Java, and Customer Relationship Management/Sales Information System. 40 hrs/wk. Resume to B. Smith, HR #18, Softelcomm, Inc. 849-C Quince Orchard Blvd, Gaithersburg, MD 20878.

Software Engineer/Developer needed to assist in building an SAP EH&S R/3 system. Requires Masters Degree in Engineering or related field and 2 years experience in software development which may precede Masters Degree. Resumes to: Human Resources, Enterprism Solutions, 1 Little Falls Centre, Ste. 110, Centerville Rd., Wilmington, DE 19808. Refer to job code: BDBC

Systems Analyst wanted by FL based Co. Must have Master's degree in Comp. Sc. or Engg., 2 yrs. of exp. in Comp. S/W dev. and/or cons. Must have proficiency in RDBMS, VB, VS, Weblogic, XML. Respond to: GSNP Corporation d/b/a Howard Johnson, 3314 S. Dale Mabry Hwy., Tampa, FL 33629. (Ref. GG 8205). No phone calls.

Project Mgmt Analyst (Brunswick, New Jersey): Manage, coordinate & analyze activities re info. Tech. & internet-based projects. Determine project costs, requirements, etc. Requires: 2 yrs. exp. in job offered or 2 years exp. as a mgmt execut. or a related position with same duties and *Bachelors in Business Admin or a related field. *Will accept bachelor's in a combination of college level education and experience. Exp. ref. required. Salary: \$68,000/yr. EOE. Send resume to: Vertex Soft, Inc., 622 Georges Road, Ste. 104 N. Brunswick, NJ 08902.

Baan Tools Specialist

You will be responsible for requirements analysis & Baan ERP implementation to support sales, marketing & manufacturing. Ideal candidate will have Bachelor's degree in C.S. or related field with at least three years experience in Baan ERP systems implementation in UNIX & NT environment. Send resume to HR Manager, Stonhard, Inc., P.O. Box 308, Maple Shade, NJ 08052, FAX: (856) 321.7525, www.stonhard.com, EOE, M/F/H/V. No phone inquiries.

Programmer-Analyst for specialty wire and cable manufacturer in Fort Mill, South Carolina. Minimum two years experience developing, designing, coding, analyzing and implementing commercial system applications using JAVA, XML, and DHTML, performing debugging and unit testing on applications to eliminate errors and ensuring quality operations. Requires Bachelor of Science degree in Computer Science. Send resume to Recruiter-PA, Belden Wire & Cable Company, 793 Fort Mill Highway, Fort Mill, SC 29715.

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NV Health Care seeks System Analyst to analyze and develop business information technology projects; maintain applications; develop extended & system stored procedures; configure server; develop reports; upgrades system. Min. req: Bachelor's Degree in Electronics Eng or equiv. based on a credentials evaluation, and 2 yrs. exp. in job or job-related, which includes Programming, health/care, laboratory operations, Visual Basic, Unidata, SQL and Pick programming. Travel required. Resumes to H.R. Dept, 4230 Burnham Ave., Las Vegas, NV 89119. No calls. EOE

Programmer Resources International Inc is seeking experienced Programmer/Analysts with Sytems Architecture background including DB2 Stored Procedures, NDM, SQL, etc. Applicants please forward detailed resume to : 15620 Manchester Rd Suite 210-22, Ellisville MO 63011 Attn: HR

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Software Engineer to design, development, test and maintain embedded systems, products and GUI development for debuggers of various zilog processors. Strong object oriented software development with C++, VC++, RTOS, Debug Monitors, XML, MFC and Stingray. Require: BS Degree in Computer Science/Engineering/Science, or a closely related field with more than one years of progressively responsible experience in the Job offered or related occupation of Programmer. Extensive travel on assignments to various client sites within the US is required. Competitive salary offered. Apply by resume to : Ravi Kandimalla, President, EVEREST COMPUTERS INC., 900 Old Roswell Lakes Parkway, Suite 300, Roswell, GA-30076: Attn: JobSR

SOFTWARE ENGINEER to design, develop, test, implement and maintain network management application software using Object Oriented Design/Programming, C/C++, Java, Net Expert, Rational Rose, UML, CORBA, Oracle RDBMS, TCP/IP, TMN, SNMP, TL1, ATM and ADSL under UNIX operating system; Mentor junior engineers. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with four years of experience in the job offered or as a Systems Engineer or Programmer/Analyst. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Kenneth T. Miles, MSI Consulting, 6151 Powers Ferry Road, Suite 540, Atlanta, GA 30339; Attn: Job SH.

Software Consultant Design/code/implement SAP applications using ABAP programming; implement software lifecycle with respect to SAP; develop real time interfaces from SAP to EAI and MQ series; design/code SAP script; develop elec. data interchange (EDI) scenarios for vendor payments, bus. apps. prog. interfaces (BAPIS); extraction programs; dev. programs for DELTA and refresh loads of R/3 data; design search helps/data inquiry dictionary objects, modify SAP printing programs. Req. Master's in Comp. Sci., Eng., or equiv. and 2 yrs. exp. in job offered or 2 yrs. as Software Developer. Resume to HR, GDKN, 300 S. Pine Island Rd., Ste. 3033 Plantation, FL 33324

Multiple openings for permanent Programmer Analyst/Quality Assurance/Test Engineer/Data-base Administrator/System or Network Engineer/Business Analyst/Software Engineer positions from entry to senior level throughout the US. Will design, develop, program and test business applications, enterprise systems, networks and computer systems involving TPF, sales force automation, data warehousing, business metrics, E-commerce, Internet/Web applications and others using object-oriented design and development, relational database modeling, distributed systems and current Web technologies. Particular tools include one or more of: JAVA, C/C++, Visual Basic, ASP, ActiveX, UNIX, PL/SQL, SAP, Windows NT, Lotus Notes, Perl, COBOL, IMS, CICS, DB2, TPF, Assembler, CORBA, HP/UX, COM/DCOM, OLE, CGI, Internet technologies such as HTML, JDK 1.2, Java Web Server 2.0, EJB in Sun Solaris, Windows NT 95/98 and others. B.S. in Computer Science, Engineering, Math or related area. Will accept combination of education, training and experience in lieu of degree. Prior experience and M.S. required for some positions. Competitive salary/401(k)/benefits offered. Most active locations include: Atlanta, GA, Bloomington, MN, Chicago, IL, San Francisco, San Jose, CA, Baltimore/Columbia, Maryland, Durham, NC, Ft. Lauderdale, FL, Miami, FL, Minneapolis, MN, Fairfax, Herndon and Richmond, VA, St. Louis, MO and Winston-Salem, NC. Send resume to: IntelliMark, 701 Emerson Road, Suite 445, St. Louis, Missouri 63141, Attn: Betsy Smith.

SAP Systems Analyst needed for Consulting and Information Company in Alpharetta, GA. Job duties include: Utilizing business and technical expertise in systems application and products in data processing (SAP); analyzing user requirements, procedures and problem to automate processing, or to improve existing computer SAP systems; and planning, designing and implementing an integrated family of sales, marketing, and customer service applications. Applicant must have Masters in Business Administration, Computer Science or Engineering, plus 3 yrs. of exp. in SAP FI/CO modules and at least 2 yrs exp in oil and gas modules. 8:00 am to 5:00 pm Monday-Friday. \$102,000 per year. Send 2 resume and cover letter to Heather Arnold, B2B Workforce, Inc. 11625 Rainwater Drive, Suite 340, Alpharetta, GA 30004

Sftwr Services Eng'r (multiple positions). Belmont, CA. Develop, create and modify web-based applic. sftwr using Java, XML, SQL, PERL, & JSP. Resp. for troubleshooting, product config., customization tasks, data mapping, plan object def'n, and UI Elements. Design & develop corresponding white box & black box testing scripts & methodologies. REQUIRES: M.S. (or foreign equiv) in Comp. Sci., Mech. Eng'r, Chem., or related field plus 1 yr exp in job offered or 1 yr exp as a Sftwr Eng'r, Sftwr Conslt, or Activations eng'r Exp., which may have been obtained concurrently, must include 1 yr exp utilizing Java and 1 yr exp utilizing XML. Mail resumes (no calls) to Coralee Traficante, Aptegity, Inc., 155 Passaic Ave., 1st Fl., Fairfield, NJ 07004.

Sr. Director - PeopleSoft Solutions. Job location: Chicago, IL. Duties: Resp. for the delivery of technology-related services based on PeopleSoft products. Resp. for recruiting, develop. & staffing of employees w/in the service line. Develop & execute annual strategic plans, quarterly tactical plans, achieve revenue & margin targets & mentor directors, mgrs. & sr. consultants. Define & develop product & service offerings for clients. Conduct qual. assurance reviews of architectural designs, proposals & contracts as well as the delivery of tech. services. Act as sr. tech. resource on strategic engagements, developing & managing tech. PeopleSoft work plans utilizing knowl. of PeopleSoft Internet Architecture (PIA) & infrastructure requirements. Lead tech. team members incl. Tech. Architects, Database & Tech. Administrators, Appl. Developers, Appl. Integrators & Tech. Specialists. Also act as Tech. Architect using PeopleTools to provide complex solution designs & conduct qual. assurance reviews of other arch. designs. Mentor directors, mgrs. & sr. consultants. Requires: B.S. (or foreign equiv.) in Comp. Sci., Eng., Bus. Adm. or related field & 8 yrs. exp. in the job offered or 8 yrs. exp. as a Mgr., Consultant, Systems Analyst or Prog./Analyst. Concurrent exp. must incl. 5 yrs. exp. developing tech. work plans using PeopleSoft appls. & 5 yrs. exp. w/PeopleSoft architecture & infrastructure requirements. EOE. 40 hrs./wk.; 8:00 a.m. to 5:00 p.m. Send resume (no calls) to: Diane Tuccito, AnswerThink, Inc., 817 W. Peachtree St., Ste. 800, Atlanta, GA 30308. Must have legal auth. to work in U.S.

Systems Analyst to analyze, design user requirements, develop computerized applications for the automation of views to large databases in telecom applications. Technically sound with hands on experience in design, building Client-Server Applications, n-Tier Applications and Distributed Applications Using RDBMS, OOPs, App server, TCP/IP, MAPI and POP3, Mainframes, Shell Scripting & System Programming. Bachelors degree in Information Systems, Engineering or Computer Science and 2 years Experience. Send resume to Pyramid Consulting Inc., Attn: HR 5335 Triangle Parkway, Suite 510, Norcross, GA 30092.

Programmer/Analyst to design, develop, test, implement, and support in client/server environment, using C, C++, VC++ ORACLE, SQL, and EDI on Windows NT and UNIX Platforms. Require: BS Degree in Computer Science/Engineering/Science, or a closely related field with 3 years of progressively responsible experience in the Job offered or related occupation of Programmer. Extensive travel on assignments to various client sites within the US is required. Competitive salary offered. Apply by resume to : Ravi Kandimalla, President, EVEREST COMPUTERS INC., 900 Old Roswell Lakes Parkway, Suite 300, Roswell, GA-30076: Attn: JobKR

Software Developers Boca Raton co. seeks several software developers to develop/design under direct supervision of Sr. Developers proprietary capture and workflow mgmt. software, document image processing functions, image compression/decompression algorithms, internet enabling of doc. imaging using C/C++, Java, Bscan scripting language and other image proc. tools/scanner drivers. Req. a BS in Comp. Sci. and 1 or more yrs. exp. in job offered or 1 or more yrs. exp. as Software Eng. Resume to HR, Purchase and Delivery Admin. Services 543 NW 77th St., Ste. 200 Boca Raton, FL 33487. No calls please.

COMPUTER/IT Computer Systems Eng. Job Location: Roswell, GA. Duties: Design, dev. & maintain comp. software applications, such as DHTML, JAVA, and C++. Install and setup Computerized Process Control Management Systems and configure customized hardware & software. Plan, design, and setup a computerized production process utiliz. AutoCAD 2000 software. Manage teams for configuring collaborative software using Woldvision & J.D. Edwards. Plan, design & implement e-commerce for manuf. environments by implementing globalization and communic. among different commercial co.'s worldwide. Research & dev. Internet market for Process Control Management or Wizard Systems svcs. Requires: Bachelor's degree in Computer Science. Employer will accept any combination of education & empl. exp. equiv. to a Bachelor's degree in Computer Science. EOE. 40 hrs./wk. Send resume (no calls) to Sam Manafi, President, Wizard Systems Inc., 2403 Macy Drive, Roswell, GA 30076.

PROGRAMMER/ANALYST to analyze, design, develop, debug, test, implement and maintain web-based application software in a client/server environment using object oriented programming, Visual Basic, Visual Studio Interview, ASP, ADO, HTML, VB-Script and JavaScript under Windows and DOS operating systems; Bridge Unisys mainframe with Windows operating system for inter-processing communications using middleware software including Unisys ActiveLINC and PowerClient. Require: Bachelor's degree in Computer Science/Engineering, Information Systems, or a closely related field with two years of experience in the job offered. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Send resume to: William A. Openshaw, Openshaw Media Group, Inc., 3296 Cahaba Heights Road, Birmingham, AL 35243; Attn: Job JS.

Systems Manager: For security products manufacturing co, resp for application systems dev, implementation & support, incl maintenance of existing Enterprise Resource Planning System, Sales & Production Systems applications developed on MS Access & Visual FoxPro; & re-engineering of applications, incl data modeling, development of new algorithms, programming, testing & implementation using relational databases & modern software tools incl Internet-based access. Req's: Bachelor's degree, or equiv, in Computer Sci, Eng or related field. 5 yrs exp in job offered or 5 yrs application software exp. Exp must incl data modeling, application design, development & support. Prof in MS Access, FoxPro/Visual FoxPro, SQL, SQL Server, Visual Basic, & one modelling tool such as Erwin, PowerDesigner or Rational Rose. Familiarity with one Internet technology such as Java. 40 hrs/wk. Send resume to D. Johnson, 515 N. Fraley St., Kane, PA 16735.

PROGRAMMER ANALYSTS required for our Warren, NJ office. Design, develop and maintain software applications using DB2, IMS DB/DC/ADF, Teradata, Datacom, DB/DC, PL/1, Assembler, Natural ADABAS and also quality assurance. Bachelors Degree required in Computers, Math or any other related field of study + 2 years experience in the job described above. 40 hrs/wk. Please send resume to HR Manager, Computer Manpower USA, Inc. 15 Old Forge Drive, Warren, NJ 07059.

Programmer Analyst (multiple openings): Analyzes user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software. Analyzes science, engineering, business, and other data processing problems for application to electronic data processing systems using relational database management systems (RDBMS) and related software. Must have one year of experience using one of the following: Informix, Oracle, FoxPro, Sybase, SQL Server or Progress. Must also have one year of experience in job offered or as a computer professional. Work involves extensive travel and frequent relocation. Bachelor's degree or foreign equivalent (3 or 4 year); or equivalent combination of education and experience, in one of several limited fields: Computer Science/Apps, Eng., Chem., Math, Physics or scientific or business related field. Salary: \$67,000 per/yr, 40 hrs/wk., 8:00-5:00 p.m. Please submit resumes to: Manager, Armstrong County Team PA CareerLink, 1270 North Water Street, PO Box 759, Kittanning, PA 16201-0759. Reference: Job Order No. WEB 249349

Programmer Analyst (IBM Mainframe) - Multiple Openings

Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance, support and conversion of large volume online transaction processing and batch application systems in a multi-hardware/multi-software environment over centralized database systems using relational/hierarchical/network database management systems, Third Generation Languages (3GLs), Fourth Generation Languages (4GLs), CASE tools and Transaction Processing Software. Bachelor's Degree (or equivalent) in Computer Science-Math/Engineering/Science/Business-Commerce and 1 yr. experience in job offered or as Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 1 of A and 1 of B and 1 of C; or 1 of A and 2 of B; or 1 of A and 2 of C. A includes DB2, IMS DB and IDMS DB; and B includes CICS, IMS DC, IDMS DC, ADS/O, QMF, VSAM and MF-Workbench; and C includes TELON, IEF, ADW, CSP and APS; High mobility preferred. 40 hrs/week, 8 am - 5 pm. \$66,829 - \$78,000 per year. Qualified applicants should contact or send resume to: Manager, Westmoreland County CareerLink, 300 East Hillis Street, Youngwood, PA 15697-1808. Refer to Job Order # WEB 249047.

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Nexgenix, a leading supplier of a new category of Internet professional services called e-Relationship solutions is seeking Technical Architects, Developers, Designers, Analysts, Project Managers, Software Engineers and Strategists in the following locations: CA, NC, NJ and Kansas City. Depending on the position, applicants must possess a Bachelor or Masters Degree and/or equivalent combination of education and/or experience and related skills.

Resumes should be submitted with cover letter referencing Ad #CW602 and Job Title for which resume is submitted to: Don Loewe, 320 Commerce, Irvine, CA 92602. APPLICATIONS SUBMITTED WITHOUT REFERENCE TO AD #, JOB TITLE AND LOCATION WILL NOT BE ACCEPTED. EOE M/F/D/V

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Data Ties

suppliers that it expects them to implement data synchronization capabilities being offered by Uniform Code Council Inc. in Lawrenceville, N.J.

Two top grocers, Ahold USA Inc. in Chantilly, Va., and Shaw's Supermarkets Inc. in West Bridgewater, Mass., are also backing the effort. And 19 other companies joined Wal-Mart, Ahold and Shaw's in signing an open letter that calls for the universal adoption of standards being established by UCC and a product data synchronization hub set up by its UCCnet Inc. subsidiary.

The goal is to lower costs for retailers and manufacturers alike by using UCCnet's XML-based information registry to help reduce inventories and product shipment expenses. But officials involved in the effort acknowledged that compa-

nies might have to make big IT changes in order to participate.

Johan Sauer, global business development executive at online exchange Transora Inc. in Chicago, said there will be a dramatic increase in the amount of data that manufacturers must provide to retailers. He likened the necessary IT work to the installation of a full-blown enterprise resource planning (ERP) system.

Procter & Gamble Co. and seven other manufacturers have started using Transora as a clearinghouse that collects their product data and sends it to UCCnet's registry. Sauer said Transora had to combine nine different applications to build a data catalog and has set up a workflow of 35 separate steps to manage the data it shares with UCCnet.

But all of that work might prove worthwhile in the long run, Sauer added. "What [UCCnet] did was kick us all in the butt and make us move," he said. The development work

What [UCCnet] did was kick us all in the butt and make us move.

JOHAN SAUER,
TRANSORA INC.

was completed in February, and Transora now collects data on up to 230 attributes per product and converts it all into XML documents that are fed into UCCnet's systems.

Milan Turk Jr., director of customer e-business at P&G, said the new data synchronization capabilities are the culmination of extensive in-house ERP, supply chain and application integration work at P&G.

"Our work plan for the past couple of years has been building [systems] so that we can be standards-compliant," he said. P&G began passing limited amounts of data through Transora to UCCnet in April, and Turk said the system should be

ready for a full changeover later this year.

Sara Lee Corp.'s bakery division in St. Louis has also had to make big IT changes. To get its warehouse operation ready to take part in UCCnet, Sara Lee first had to add its frozen dough business to the unit's SAP ERP system, said Martha Uhlhorn, executive vice president of e-commerce at Sara Lee Bakery Group. Information from the system will be sent via electronic data interchange transmissions to Transora and then on to UCCnet. The process also required some jury-rigging, Uhlhorn said. "SAP doesn't have a field for all the information we need to supply [to UCCnet], so we'll send an auxiliary transmission to fill in the other fields."

Multiple Hubs?

The IT investment could be especially daunting for companies that "have not even begun to electronically talk to their partners," said Gene Alvarez, an analyst at Meta Group Inc. in Stamford, Conn.

UCCnet also may not be the only data hub to which suppliers need to link their systems.

Marco Carrillo, manager of business and technology at Chiquita Brands International Inc. in Cincinnati, said other grocers that have yet to sign on with UCCnet could require completely different data submissions. "The retail industry does not have a clear vision of where it wants to go," Carrillo said. "To be honest, I'd like to only integrate once."

About 100 companies have signed up to use the UCCnet registry, well below a goal of getting 600 subscribers by June 1 that was set by its backers. But a UCCnet spokeswoman said there's still time to get 600 users online by year's end. ▀

UCCNET'S CAPABILITIES

For more details about the workings of the UCCnet data registry, head to our Web site.

QuickLink: 30386
www.computerworld.com

Some Suppliers Get Extra Time

Not all trading partners of retailers involved in the data synchronization effort will be forced to start using UCCnet's product data registry this year. Suppliers of perishable goods are being given until late next year to make the switch, and some IT managers said they need the extra time.

"We have a proliferation of computer systems, and right now they are not able to work together in a way that could meet these requirements," said Marco Carrillo, manager of business and technology at Chiquita Brands International in Cincinnati.

Carrillo said he's thankful not to be on the front line for the UCCnet implementation, giving Chiquita time to complete a full review of its systems and business processes. "We can also learn from the others who went first," he said.

Martha Uhlhorn, executive vice president of e-commerce at Sara Lee Bakery Group in St. Louis, said the baked goods part of its business - which accounts for 75% of sales - is nowhere near ready from an IT perspective. "I couldn't do it today if they put a gun to my head," she said.

While Sara Lee was able to prepare its smaller warehouse division to support the UCCnet proposal, Uhlhorn said the baked-goods unit will require a completely different fix. That operation uses a set of homegrown applications instead of Sara Lee's SAP-based enterprise resource planning system.

"Nowhere in my legacy systems do I have all of that [UCCnet-required] information in one spot," Uhlhorn said. Her long-term plan is to send baked-goods product data "in bits and pieces" to the Transora online exchange, which will pool the data, pass the information on to UCCnet and send it back to Sara Lee as a single file.

But first, Uhlhorn said, Sara Lee needs to set up a system that can store all the data. A budget and schedule for that project have yet to be determined, she added.

- Michael Meehan

Oracle, Dell, Red Hat Target Enterprise With Linux Bundle

System challenges Unix midrange turf

BY TODD R. WEISS

Linux may not yet be revolutionizing business IT, but its evolution continued last week when three vendors teamed up to announce a server/database bundle that runs on the open-source operating system.

Oracle Corp., Dell Computer Corp. and Red Hat Inc. said they're jointly developing and testing a system that combines Dell servers, the Oracle9i database and Red Hat's Advanced Server Linux software. The out-of-the-box configuration is aimed at taking on Unix sys-

tems for corporate application uses, the companies said.

For users, the Intel-based Linux bundle is being touted by the three vendors as an offering that equals the performance of Unix midrange systems at a lower cost, said Dan Kusnetzky, an analyst at IDC in Framingham, Mass.

"It's not the end of the journey, but it's an important mile marker" in the progression of Linux into business computing, Kusnetzky said.

Bill Claybrook, an analyst at Aberdeen Group Inc. in Boston, said the alliance will help the three companies gain credibility as Linux continues to take hold with users.

For customers, running the

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\$11,900 per node for a PowerEdge 6400 server, 1GB RAM, four 36GB hard drives

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Oracle database with Raleigh, N.C.-based Red Hat's software using Dell hardware should offer a price/performance advantage compared with Unix systems, Claybrook said.

In most cases, Claybrook noted, users can buy four four-way Dell servers running Oracle and Linux for less than a 12-way or 16-way RISC Unix system. "There's a pretty hefty savings there," he said. ▀

FRANK HAYES/FRANKLY SPEAKING

Open-Source Hot Air

LOOKS LIKE IT'LL BE A LONG, HOT SUMMER — at least when it comes to politics and open-source software. Last week, Ralph Nader sent a letter to the White House suggesting that the government use its purchasing power to keep Microsoft in line by adopting open-source software [QuickLink: 30404]. That was just after a Microsoft-funded think tank, the Alexis de Tocqueville Institution, announced the publication of a white paper arguing that the government shouldn't use open-source software because it would pose a national security risk.

Competing masses of hot air in Washington are nothing new. Neither is government use of open-source software — that's been steadily increasing, both in the U.S. and abroad. And that's good news for corporate IT people, since it means somebody else is doing the work to evaluate the software, so we don't have to.

It also puts pressure on Microsoft — which has lobbied furiously against federal use of open source — to close security holes, improve quality and cut better deals with customers. That's the kind of leverage we'd like to have with any IT supplier.

Trouble is, we're not going to get any leverage from the most recent round of rhetoric.

Consider Nader's letter. It's nominally a request for information from the Office of Management and Budget. ("Approximately how much money has the federal government spent each of the past seven years to license MS Windows for the client platforms?") But the letter is really a proposal that the government use open source to pressure Microsoft.

True, the government has done this before. That's how a previous Seattle-based high-tech giant was broken up in 1934 into today's United Air Lines Inc., The Boeing Co. and United Technologies Corp. William Boeing's United Aircraft and Transport Corp. wasn't dismantled by an anti-trust lawsuit, but because the federal government refused to give air-mail business to a monopoly.

But how likely is the Bush White House to apply that kind of pressure to Microsoft? Not very. The Nader letter isn't a serious proposal — it's just a lot of gas. And IT gets no leverage from that.

The Tocqueville think tank's pitch is even lamer — it suggests that using open source would "alter

the very foundation of computer security" because bad guys can see open-source software's architecture and source code.

Sure, but "security through obscurity" — just trying to hide that information — doesn't work. And it isn't necessary. For example, bad guys can also see the details of the most successful encryption algorithms, but that doesn't make crypto easier to crack. And though the source code for commercial software isn't available, hackers and terrorists can buy exactly the same product a government agency uses, then experiment to find security holes at their leisure.

But with open source, government IT shops can patch, customize and recompile at will. (And don't kid yourself — any patches the government deems secret *won't* go into the public domain, GNU license or no.) That kind of flexibility explains why Mitre Corp., which has analyzed computer security for the Defense Department since Bill Gates was still in short pants, recommended last month that the Pentagon keep using open source for lower costs and improved security.

From the Tocqueville think tank, we got no real security analysis — just more gas. These guys and Ralph Nader deserve each other.

There is a serious debate under way on the virtues and shortcomings of open source. It looks like we just won't hear any of it in Washington this summer.

Maybe it seems obvious, but as the rhetoric heats up, it's worth saying again: The real question about open-source software — or any IT system — isn't who makes it, or how. The question is whether it can do the job you need it to do, with the effectiveness, security, reliability and support you require.

The rest is just hot air. ▀



FRANK HAYES, *Computerworld's* senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

SHARK TANK

THERE'S a dark stain on the week-old desk when support pilot fish arrives to replace a defective mouse. And the defect? The body is black, and the cord has been melted off. User confesses she tried to cover the unpleasant new-desk smell with a scented candle — which set her reports on fire and torched the mouse, too. "I told the auditor the problem was a hot user," fish says. "He didn't buy it."

SCHOOL principal tells IT pilot fish that all his school's mice need replacing "because they no longer move properly." Maybe they just need a good cleaning, fish says. "That's not possible," says principal. Fearing students would remove the mouse balls, he had glued shut all 250 brand-new mice. "He insisted this should be covered under warranty," says fish. "Yeah, right."

HMO STAFFER calls the help desk — her mouse has died

again. "I brought another new mouse to her workstation," sighs long-suffering pilot fish, "and explained one more time that you do *not* plug in the mouse with a twisting motion."

PC ON THIS plant floor gets flaky, so IT pilot fish swaps it out to diagnose the problem. "It was on the same table as the coffee pot, along with the sugar and cream," fish says. "Inside the PC, there was sugar everywhere — the CPU was covered in melted sugar." And he finds the nest of a mouse — the live kind — that dragged all those sugar packets in through an uncovered slot on the back of the PC.

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